Internet use by teenagers:
Social inclusion, self-confidence and group identity

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Thesis submitted for the degree of Doctor of Philosophy

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October 2007

Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Abstract

Traditionally, debates about digital exclusion have been concerned with a lack of access to the internet by certain groups. Currently, the debate is shifting towards quality of use. Yet, it remains unclear which processes underlie differences in digital inclusion. By combining macro, micro and meso theoretical perspectives, this thesis examines the influence of resources, context, confidence and social identity through the application of three different research elements: nine preparatory interviews; a survey with 730 students; and an experiment with 200 students from fifteen schools in the Greater London Area. The focus was on teenagers from different gender, ethnicity, physical ability and sexuality groups.

The findings show that gender and context are important explanatory factors of internet use. At school, meso (social-identity) factors contributed to explaining internet use; at home, micro (psychological) and macro (resource) factors were more important. This suggests that schools offer equalising environments in which differences in digital inclusion based on socio-economics are evened out. The findings also suggest that personalised and anonymous use at school makes teenagers less vulnerable to peer-pressure. By contrast, anonymity increases undesirable uses at home especially for boys. The experiment shows that addressing teenagers in a neutral (anonymous) way might steer internet behaviour and the perception of skills in a non-stereotypical direction.

Finally, the level of digital inclusion at the group level determined the effect of socio-economic status on internet use. Internet use of (White and Asian boys') groups with high internet status was mainly influenced by macro and micro factors. Group processes and social identification also influenced those (girls, African Caribbean, and disabled) of low internet status. The processes behind internet use were found to be more consistent for digitally advantaged groups than for disadvantaged groups. The thesis concludes that theory regarding digital inclusion should be diversified to address different types of exclusion.

Acknowledgements

First and foremost, I would like to thank my supervisor Professor Sonia Livingstone. This thesis has benefited enormously from her insight, guidance and patience. Especially important were hour long discussions during supervision periods and her constructive criticism. She always knew when to push me and when to let me get on with it or wrestle through it on my own.

Second, I would like to thank all those on the sidelines who have given me psychological support and who are probably just as happy as I am that there is now a final version of this thesis. Thanks to my mother Annelies, my father Hans, and brother Charlie and of course to Jon who has been so incredibly supportive and understanding throughout the writing process. I would also like to thank Vanessa without whose effort and dedication this thesis would have been a lot less readable.

I would definitely like to thank all the wonderful people at ULU volleyball who kept me sane in body and mind, and the Methodology Institute who kept my glass topped up and my brain buzzing. Finally, I would like to thank, in alphabetic order: Annemein, Albertine, Alexandra, Charlie, David, Elizabeth, Evangelia, Freddie, GeeGee, George, Hermanja, Jouni, Monty, Patrick, Raca, Wednesday, Winand, and Zoe.

This research has been financially supported by an Economic and Social Research Council Studentship (PTA-030-2003-01685) and grants from the London School of Economics and Political Science. Further fundamental support was received from 15 schools and their students in the Greater London Area who participated in this research project and from the Circles, LGB, African Caribbean and Asian societies at the LSE.

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1 Social exclusion and the internet

The internet has a short but successful history as a mass medium. Two decades ago the mediated world was dominated by television and radio, videogames were popular and only a handful of academics and military personnel had ever heard of something called the internet. Ten years later the use of this little known medium grew exponentially and just recently the increase in the number of persons with internet access has reached its peak and begun to slow down in most Western countries. This rapid increase in internet access, use and penetration has raised questions about the ways in which it changed everyday life. More specifically, there is concern that the proliferation of the internet in some groups means that other groups are left behind and that we lack understanding of how this type of exclusion occurs.

Diffusion theory (Rogers 1995) predicts that take up of the internet will follow a clearly predictable pattern starting with a few enthusiasts, then spreading to the masses and eventually reaching even the technology sceptics. In countries where the internet became widely available it was seen by many as the medium that was going to end social inequalities. People who had been deprived of education, information and services would be able to access these on an equal footing to everyone else through the internet. However, now that internet access has reached its peak, it is clear that particular social groups are using the internet in a far more limited manner than others.

The spread of access and use of the internet has thus not been equal throughout society (Norris 2001; Warshauer 2002). This is potentially problematic because governments, NGOs and commercial companies are moving many of their operations to online formats, excluding members of certain groups from crucial economic and social resources. The United Nations is one of the organisations that has put the issue of this 'digital divide' on the global political agenda. Annan, the former secretary general of the UN, stated in 2003 that:

> "A 'digital divide'[1] threatens to exacerbate already-wide gaps between rich and poor, within and among countries. The stakes are high indeed. Timely access to news and information can promote trade, education, employment, health and wealth. One of the hallmarks of the information society – openness – is a crucial ingredient of democracy and good governance. Information and knowledge are also at the heart of efforts to strengthen tolerance, mutual understanding and respect for diversity" (p.1).

According to this digital divide framework, the patterns of exclusion that emerge from internet studies are said to be similar to those found in 'other non-technological aspects of society', further marginalising these same groups (Adam & Green 1998; Anderson, Brynin & Raban 2000; Loader 1998; Selwyn 2003; Wellman, Haase, Witte & Hampton 2001). Therefore, policy-makers and academics alike try to understand why members of certain groups (e.g. the disabled, women, ethnic minorities) are using the internet differently and, through this understanding, prevent further exclusion from work, social and cultural environments.

The excluded are often treated as a homogenous group in these debates and little is understood about the types of exclusions that might lie behind a variety of digital exclusions. For example, while many agree that there are differences in use between ethnic and gender groups, surprisingly few are asking whether or not the reasons some ethnic minorities are getting left behind are the same as those that make women feel left out. Since many policy documents have now stressed the importance of giving everybody equal access to the information society and prevent digital exclusion, this lack of nuance in understanding seems almost irresponsible. This thesis contributes to closing this gap in knowledge by examining the variety of processes leading to internet use in different vulnerable groups.

This chapter is an introduction to the broader policy frameworks that are relevant to this investigation. After discussing these, an overview of the aims of the research project is given, followed by a brief summary of what is already known about

[1] The digital divide refers to the division of groups or countries into those that have access to digital technologies (including the internet) and those that do not. The lack of access is often said to be caused by a disadvantage in financial or educational resources (Dutton & DiGenarro 2005; Livingstone, Bober & Helsper 2005b; Norris 2001; Warschauer 2002).

exclusion and internet use. The chapter ends with a brief explanation of the methodology that was used to study the processes behind differences in internet use.

1.1 Micro- and macro-level analyses

The differences in internet use among various social groups have been studied using mainly sociological, economic and cultural studies frameworks (Van Dijk 2005). These tend to give a macro-picture of the so-called digital divide and complicate explanations of internet use at an individual or micro-level. This distinction and the interaction between macro- and micro-levels is central to this thesis and therefore requires a more in-depth discussion.

In political science, social psychology, and media studies several authors have classified the levels of analysis available to the researcher to investigate human behaviour and thinking; making a distinction between micro-, meso- and macro-level analyses. Evaluating audience studies, Livingstone (1998b) has argued strongly for an approach to media studies that incorporates both macro and micro aspects into the analysis of media use. Similarly, Loader (1998) argues that 'cyber society' should be studied taking both structural and agentic aspects of exclusion into consideration (see also Van Dijk 2005).

The interpretation of what micro and macro refer to varies between academic fields and researchers. The generally accepted distinction is that the micro is everything related to the individual and relationships between individuals, the meso all that involves groups of individuals and the macro refers to broader structures in society that encompass different groups. Sometimes the meso and the macro are joined together in one category and refer to general 'structures in society sustained [...] by mechanisms of social control and that constitute both opportunities and constraints on individual behaviour' (Munch & Smelser 1987, p. 357). In other words, the most general distinction is that macro signifies the collective or group level, referring to nations or groups within nations, and the micro denotes the individual level, referring to the person (Huber 1991).

In fact it is often argued that the two concepts, micro and macro, cannot be separated; micro-level frameworks always seem to include some idea of macro-level structures or the environment in which the individual lives and macro-level theories make assumptions about individual decision making processes and behaviours and thus about the micro-level (Munch & Smelser 1987; Livingstone 1998b). How the micro and the macro are linked in technology studies is still a point of discussion (van Dijk 2005). Some propose aggregation as the solution, saying that the macro is nothing more than the sum of the micro, so that in fact it is only necessary to take appropriate measures at a micro-level and expand them or generalise them to a macro-level (Eulau 1996). Another way of looking at it is that the macro socialises individuals to behave in certain ways: that the macro structures are internalised by the individuals (Huber 1991). A third more common approach is that the macro sets the boundaries for the micro. Munch and Smelser (1987) compare this explanation to the functioning of laws; a law (the macro) defines the rights and obligations of an individual (the micro). The individual is limited in his or her actions within this law; they set the agenda for the actions on a micro-level. Alexander (1987) argues that the same law metaphor implies that, where social macro-structures limit behaviour and thought, there are individual level factors that redefine these limits.

The research presented in this thesis uses what Livingstone (1998) has called the 'less agentic version of social constructionism' (p.208) which she argues is close to Lindlof's (1991) idea of a system in which personal norms, statuses, and conduct regulate communication within a restricted environment. In other words, an individual's behaviour and attitudes are influenced by the personal circumstances and direct physical and social context, but also interact with social categories, such as marginality, that are ascribed to this person.

The argument that both macro (societal) and micro (individual) structures can be used to explain internet behaviour and attitudes motivates this thesis.

The question asked in relation to the above is:

Q1.1 *(How) Should thinking about digital divides be reshaped to incorporate an interaction between micro-agentic and macro-societal factors?*

Based on the literature presented it is clear that the underlying assumption in this thesis is that there is an interaction between macro and micro-level factors and that this should be incorporated in thinking about digital exclusion. Therefore, the real questions are what is the unique value of these frameworks and how might an interaction approach be of practical use in policy and research? This is a relatively novel approach because most internet policy research has fallen victim to the traditional digital divide paradigm, in which macro factors such as social grade or resources are assumed to play an overpowering role in determining the behaviour of all vulnerable groups. While most internet researchers agree that this paradigm has come to an end in terms of its usefulness, few alternative approaches have arisen that are capable of capturing the complexity of digital exclusion in different vulnerable groups.

Using a combination of macro and micro frameworks as presented above, this thesis investigates the use of the internet by different social groups, and thus addresses the complexity of digital exclusion.

The next section details how this framework translates into the aims of the investigation.

1.2 Aims

The first aim of this project is to *identify key features of internet use and experience* among four vulnerable segments of the population. To achieve this, data will be collected from individuals from groups considered vulnerable to exclusion on the basis of their gender, ethnicity, physical abilities and sexual orientation. The focus will be on how individuals use and perceive the internet and their relationship to this medium in different contexts.

The second aim is to contribute to theory by the *development and testing of a theoretical model* in which micro- and meso-level characteristics, such as confidence, social identity and social context, mediate the effects of macro-level factors, such as resources and access, on internet evaluation and use. By integrating existing theories

into one comprehensive framework this project fills a gap in the understanding of internet use and its relationship to exclusion.

Based on these two principal aims the main question that this research addresses is:
Q1.2 *Which theoretical model explains digital exclusion best; is there a single process or do models vary for different groups and different contexts?*

A further intention of this study is to demonstrate the *value of different methodologies and analytic techniques* in internet studies, by using *path analysis* techniques to look at adoption and opinion formation processes, and by using an *experimental design* to examine the ways in which context influences the use of the internet by these groups.

The methodological question of this thesis is therefore:
Q1.3 *Can the application of multivariate statistical techniques and experimental methodologies give new insights into digital exclusion?*

In using these techniques to answer the main research question it should be possible for the research to go beyond broad assumptions made about digital exclusion. Using an integrated theoretical model should bring more clarity about the diversity in processes behind internet use.

Although this thesis is not directed at shaping policy, the findings and theory presented could inform policy in an indirect way by expanding what is known about internet use in different groups. This study *contributes to policy* by differentiating between a variety of digital exclusion processes and thus offering tools for evidence based policy. By applying the theoretical model to empirical data as proposed by the empirical, theoretical and methodological aims, this thesis attempts to integrate individual micro approaches with the socio-economic macro approaches that are currently the basis of many policy frameworks.

In relation to policy this thesis asks:

Q1.4 *Which characteristics (micro and/or macro) should be central to policy so that it will be effective in giving everyone equal opportunities to take advantage of the internet?*

This research will further understanding about which contexts create the ideal circumstances for individuals from vulnerable groups to obtain benefits from the internet. If the circumstances are identified under which the internet reaches out to all these groups, steps can be made to include them as full members in our information focused society.

To understand current policy and what the contribution of this thesis could be to policy debates the next section introduces existing policy frameworks in the EU and the UK.

1.3 Policy frameworks and implications

On a European level policy-makers have frequently focused on improving infrastructure as a solution to digital (and social) inequalities. The motivating idea that technology would have immediate positive effects if made available to all was subsequently part of many policy initiatives (Durieux 2003; Loader 1998). However, changes can be observed in the way policy is recently formulated. The eEurope 2005 policy document concentrates not only on improving technology infrastructure but also on the development of internet skills (Commission of the European Communities 2002). Notwithstanding this broadening of concerns, the emphasis is still on universal access as a solution to the 'digital divide problem'. This is especially apparent in the focus on the dissemination of broadband and the extension of internet connectivity. The suggested policy stresses the importance of improving technologies , but hardly addresses the issues as seen from a user's point of view. Since a different emphasis in research can aid different policy perspectives, this thesis studies the relationship between the use of the internet and social exclusion through both top down and bottom up approaches.

A problem for policy-makers is the differing and often vague definitions of what it means to be included or excluded from the information society, other than the differences between having access, or not having, access. The problem in defining what inclusion means is illustrated in the UK government's UK Online report published in 2004:

> "In 2000 the Prime Minister set a target for internet access for all who want it by 2005, underlining the Government's commitment to ensuring that the opportunities of the digital age are extended to all. The target recognises that, unless tackled, digital exclusion may reinforce rather than address broader social inequalities" (e-Envoy 2004, p.5).

Even though this document assumes broader social implications of digital exclusion and talks about opportunities, the solution focuses mainly on providing access to the technology. Another example is the way in which the EU Employment and Social Affairs Committee (2004) referred to digital inclusion:

> "eInclusion aims to prevent risks of 'digital exclusion', that is to ensure that disadvantaged people are not left behind and to avoid new forms of exclusion due to lack of digital literacy or of Internet access. At the same time eInclusion means also tapping new 'digital opportunities' for the inclusion of socially disadvantaged people and less-favoured areas. The Information Society has the potential to distribute more equally knowledge resources and to offer new job opportunities, also by overcoming the traditional barriers to mobility and geographic distance" (p.1).

In this definition the benchmarks of inclusion seem to be access and digital literacy. The equal distribution of opportunities is mentioned, but what digital literacy, opportunities, and knowledge mean in practice is not clear in this and other policy documents (Livingstone, Bober, & Helsper 2005a-b). Ofcom (2006a-d) and more recently Becta (2007) have started to integrate these issues into their research framework and encourage others to define information and digital literacies. These studies raise questions about what digital literacy is and whether it suffices to be literate but a non-user.

Another problem for policy making is the heterogeneity of the groups that are considered to be in need of inclusion. Often policies were made for all vulnerable groups without making distinctions or incorporating specific needs of specific groups. There is little insight into how differing solutions might be appropriate for different

groups if they are needed at all. For example, in the Digital Divide in a World City report that discusses exclusion in London and the UK, Foley, Alfonso, & Ghani (2002) state that:

> "A digital divide exists, but it is not as simple as have and have nots. There will always be a divide between high, medium, low and non-users. Disadvantaged users always have to play catch up in obtaining access and advantaged users will always leave them behind gaining higher levels of skills and adopting newer technology and services" (p.6 -7).

Although the authors recognise different causes and forms of exclusion and gradations of digital inclusion, they still focus mainly on types of access and skills instead of on the uses the individuals involved would consider benchmarks of inclusion. Another issue with this particular study is that, while differences between groups (women and men, disabled and non-disabled) are described, a direct comparison is not made nor is there an attempt to compare reasons for exclusion among the groups in the study. Thus, even though they explicitly argue that groups differ. only a few groups are studied and they are not directly compared. This can generally be noted about policy initiatives: explanations or descriptions are given on a macro-level, but attempts to directly compare groups of individuals are rarely made. Explanations mostly centre on economic background and focus on one group in particular, on the assumption that the same model applies to all groups no matter the circumstances they find themselves in.

Other factors beyond mere socio-demographic or economic characteristics might hinder or inhibit the (broader) uptake of new technologies (Williams, Sligo, & Wallace 2004). These include those elements labelled meso-level factors in this thesis, such as ideas about ICTs and their users held in wider society, individual evaluations of the applicability of these stereotypes and their relation to identity. Micro-level factors such as context and personal experiences also fall outside the scope of most policy research. What exclusion means and what the government would be able or want to do about it should be studied through investigating the perceptions of those individuals involved (Anderson 2005a; Foley et al. 2003; Selwyn 2005b, 2006; Stoneman & Anderson 2006). Therefore, this thesis aims to include perceptions at meso- and micro-levels within the macro frameworks currently used in digital inclusion policy.

One of the academic fields that has been particularly active in trying to put these issues on the policy agenda has been Feminist studies. These scholars have focused mainly on gender issues in the use and uptake of technologies but often their ideas have been applied to other vulnerable groups.

The liberal Feminist approach to ICT policy aims to create an environment in which women can make education and career choices that will enable them, like men, to reap the benefits of ICTs. This approach assumes that individual women have the ability to change their own lives: equality can be achieved without structurally transforming broader structures in society. Within this framework inequality is a problem of individuals not being able to realise their potential; it is not a historical or imbedded problem in which (a patriarchal) society has created structures that block specific groups from achieving this goal. Digital exclusion is seen as based on a lack of ICT experience or negative attitudes towards ICTs which lead women to turn away from technologies that could be beneficial to them. Guaranteeing open access and awareness campaigns as regards the advantages of being online should lead to an increase in ICT take up. Taken to its extreme this point of view implies that the excluded make an irrational and uninformed choice not to be part of the information society.

Current government thinking about digital exclusion is more nuanced, but relatively recent policy documents represent the liberal Feminist point of view. A statement made by the UK Secretary of the Department of Culture, Media and Sports (DCMS) is an example of the influence of this line of thinking.

> '... we need to work harder at unlocking ambition and raising aspirations in every aspect of life. In some of our most marginalized communities, it is only an investment of care, respect and time that will break down the insidious, ingrained mental barriers that people have to imagining a better life for themselves and their children. Loneliness, pessimism and lack of confidence are all serious obstacles to equality of aspiration' (Jowell 2003, p. 4).

Other Feminist scholars stress that strategies based on liberal Feminist ideas will fail because a rejection of technology goes deeper than changeable attitudes and individual choices. These perspectives argue that the rejection of ICTs is a fundamental part of some marginal (female) identities (Wajcman 1991, 2000, 2004)

and that this is built into the fabric of existing social structures. These other Feminist perspectives introduced a discussion of stereotyping and identity into explanations of digital exclusion (Gill & Grint 1995). According to these frameworks male or female identities incorporate the acceptance or rejection of ICTs. If one wants to change the acceptance of technologies by excluded groups it is necessary to change not only the perception of technology, as would be argued by liberal Feminists, but also the sense of what it means to be, for example, female, disabled, or belonging to a certain ethnic minority in wider society (Gill & Grint 1995). A third point of view, as advocated by Withers (2005a-b), argues that services online must be fitted to the needs of the user and not the other way around. In this discussion one can see the tension between the limits that social or macro factors, and meso factors such as stereotypes, put on individuals and the influence of individual, micro-level factors such as self-perception in counteracting or embracing these restrictions. Policy tends to attribute failure to take up the internet either to the micro (individuals from marginal groups just need to change their attitudes) *or* to the macro (structural social change is necessary). However, micro factors might instead interact with macro factors in different ways for different groups and individuals.

Building on the study of different policy frameworks, Selwyn (2004a-b, 2005b) argues that what is most important is the concept of empowered choice for excluded groups; what policy-makers should aim for is the creation of equality of opportunity instead of equality of outcome. This is similar to Sen's (1999) argument that governments should create 'substantial freedom' which, in the context of the internet, means that they need to create an environment in which people can use their capability to make informed choices about using or not using the internet (see also Mansell 2002a). According to Selwyn, equality of opportunity has not been achieved since a number of macro socio-economic factors still restrict equal access to training, limit experience with the internet, and prevent an objective idea of what the internet has to offer. To be able to develop a sensible policy that will create an environment of 'substantial freedom' in relation to the internet, insight is needed into what individuals from vulnerable groups want from and do with the internet.

The next section summarises what is known about general internet use by groups that are considered to be excluded and what the reasons were for including these groups in

particular. The research presented in this thesis focuses on the young members of four different groups whose characteristics have been shown to be associated with vulnerability in a variety of different areas.

1.4 Use of the internet in the UK

Even though internet use in the UK is pervasive, especially amongst the younger population, there are many different types of use and as a consequence many forms of digital exclusion. This thesis will by no means be able to cover all types of exclusion nor all sectors, but a selection has been made of specific groups that are considered of special interest to UK policy and research. To understand why these groups are of specific interest a general overview of internet use is given before continuing to discuss the specific details of internet use by young people, women, ethnic minority, disabled, and gay/lesbian groups. The one aspect that the latter four groups have in common is that they are considered socially vulnerable; job prospects and life expectancy for these groups are lower than for men, ethnic majorities, non-disabled and heterosexual people. Therefore while some of these groups might not be digitally excluded (see the rest of this section), they are all considered socially excluded in wider society. However, the level of social exclusion amongst teenagers within these groups differs. In this thesis the distinction is made between social and internet status which means separating perceptions about a group's inclusion in wider society (social status) and in internet society (internet status).

Only five years ago the number of internet users and what they did online was a grey area of speculation, but since then government and academic institutions have registered general patterns of internet use and access. Government Figures show that in the UK general access has increased consistently from 9% in 1998 to 52% in 2004 (ONS 2004). Based on the OxIS survey Dutton, DiGennaro and Millwood-Hargrave (2005) argue that home access to the internet has now stabilised at around 60% of the population. This same study shows that the quality of internet connections has increased; broadband access rose from 19% of households in 2003 to 59% in 2005. Notwithstanding this steep general increase, the Annual UK Online report (e-Envoy 2004) shows that those in the lowest income bracket are seven times less likely to be online than those within the highest income bracket. Research has also established

basic differences in internet use among especially age, gender, and ethnic groups (Cole 2003; Hollingshead 1996; Livingstone, Bober & Helsper 2005a; Loges & Jung 2001; Madden 2006; Spooner 2001a-b; McKay, Thurlow & Toomey-Zimmerman 2005). Socio-demographics are therefore considered to be an important factor in determining access to and use of the internet.

1.4.1 Different groups in the UK

A number of groups, especially women, ethnic minorities and disabled people, have been of special interest to social inclusion policies because patterns of social exclusion were assumed to replicate themselves in digital exclusion. A specific interest of health policy research has been the lesbian, gay and bisexual (LGB) community because the internet seems particularly salient to this group (e.g. Tikkanen & Ross 2003). This study incorporates these four groups which have not yet been brought together in one study focusing on internet use.

There were reasons other than strong policy interests to select these groups. They were also chosen as the focus of this thesis because the characteristics on which their social exclusion is based are unchangeable unlike, for example, poverty or education, and will be an important part of the persons' identity for the rest of their lives. This special characteristic made it possible to study the effect that social identity and stereotypes have on internet use.

Furthermore, since these aspects of exclusion vary widely in their nature they were assumed to be related to a broad range of behavioural and attitudinal differences. One of the most apparent aspects of exclusion in which these groups differ is in the visibility of the characteristics on which their group membership is based. For example, ethnicity and gender are very visible while sexuality is not, some forms of disability can be concealed, others cannot. Theories presented in the next chapter focus on the importance of the anonymity of the internet for users with very visible characteristics related to social exclusion (McKenna & Bargh 1998) and one could expect behaviour and attitudes to vary based on how concealable this identity is.[2]

[2] This argument is further explored in Chapters 2 and 3.

Therefore the groups were carefully selected to represent different points on the scale from completely concealable to completely visible identities.

Policy interest, stability of group membership and variation in aspects of exclusion were the main reasons to consider these four groups the most appropriate to incorporate in a study that tried to understand if processes behind internet use vary between social groups. The next sections give a simple overview of the internet history of these four groups starting with a justification of the choice of young people as the specific focus of this research.

1.4.2 Youth: The internet generation

Young people are considered to be the most literate and most active users of the internet, in this sense they have a high status as internet users. A study by Livingstone and Bober (2004) showed that 100% of young people between 9 and 19 had some form of access to the internet and 97% considered themselves to be internet users, of which 84% used the internet more than once a week. This in stark contrast to the number of internet users between 45 and 54 (78%) and even more so to people over 65 (30 %) (Dutton & Helsper 2007). Most young people in the UK today will have had extensive contact with the internet throughout their school years and will depend more than any other generation on the tools handed to them by this medium (Buckingham 2005; Livingstone & Bober 2005; MacMillan & Morrison 2006). For example, for some young people the internet plays a role in the development of political consciousness (Bennett 1998, 2003). These young people use the internet to position themselves and engage in political or social action bypassing the traditional vehicles for social and political participation. Bennett (2003) argues that

> "Insofar as politics matters at all to many younger citizens, it makes sense within the personal life considerations of job, recreation, shopping, entertainment, fashion, sports, self-improvement, family, friends, and the community involvements that can be scheduled around these things" (p.4).

The internet offers a medium for these young people to connect with social movements and society on their terms in a way that fits with their personal life considerations. It thus seems that the internet is more important or at least more present in the lives of the youngest generation than it is for the older generation. This

is one of the reasons young people were chosen as the focus of this thesis. This generation can be expected to use the internet not only for practical things like information seeking but also as a platform for self-expression and interaction that is unavailable to them in other more public arenas.

Between the ages of 16 and 19 establishing an independent identity is relatively more prominent than during other life stages (Côte & Levine 2002; Kroger 1996; Verkuyten et al. 1988, 2002). The reason for choosing older teenagers as the focus of this research was because of the prominence of these identity issues. Another reason was that this age group is key in the development of future policy related to the internet (Valkenburg & Soeters 2001). They are about to enter the work force and a connection and a proficiency in the digital world could be of vital importance in finding a job and create social networks, in other words feeling included. Without understanding this young generation's motivations and habits in using the internet to connect to society they will be hard to reach for educational and governmental purposes and future employers, from which they are excluded.

This young generation is of course made up of several groups, some of which are considered vulnerable to social but not digital exclusion. The following sections will discuss general characteristics of the four groups included in this research and give details for teenagers if these are available.

1.4.3 Gender

Women in the UK with full-time jobs earn around 80% of what their male counterparts earn for the same jobs (ONS 2003). These and other general statistics indicate that women are still disadvantaged in society even if in many areas they are equal to men. In relation to internet use, UK Figures (Dutton & Helsper 2007) show that women are slightly less likely than men to go online (70% of men versus 65% of women used the internet). The gap used to be bigger and data over the last five years shows an equalisation of opportunities to go online (Cummings & Kraut 2002; Odell et al. 2000; Singh 2001; Weiser 2000). However, the perceptions of women's internet skills and levels of internet use still largely favour men (Shaw & Grant 2002, Dutton & Helsper 2007).

Most quantitative empirical research on gender differences in internet and internet-related activities has been done in the United States, and it is not clear if the results can be translated to the UK context. The general focus of this US based research has been on women's lower level of experience with the internet and their more negative attitudes towards ICTs (McIlroy, Bunting, Tierney & Gordon 2001; Schumacher & Morahan-Martin 2001). There are indications that women tend to have lower levels of computer and internet self-efficacy which might discourage them from using the internet to its full abilities (Durndell & Haag 2002; Brosnan & Lee 1998). Recent UK studies indicate the situation in the UK is similar (Dutton & Helsper 2007; Ofcom 2006; Wajcman 2004). Livingstone and Helsper (2007) showed that between teenage boys and girls in the UK there were small differences in internet access, and that boys used the internet more frequently and in a broader way than girls. Other research showed that for specific types of use there might be a tendency for girls to use the internet more than boys (McKay et al. 2005; Ono & Zavodny 2003, Ofcom 2006b). On the other hand other differences in intensity of use and comfort with the medium persist, thus seemingly assigning girls a lower status in terms of their internet use and skills (Bimber 2000; Ono & Zavodny 2003; Singh 2001).

This thesis investigates whether there are any differences between teenage boys and girls, and if differences are found, how they can be explained by macro, micro, and meso factors. In this discussion the concept of status will be used to refer to the position of different groups in society. Status signifies the perception that is held in wider society about the social or digital opportunities and skills of young people from different groups. According to this approach, those who have a low social status are discriminated against and get less voice and opportunity to contribute to society. The specific definition and justification of the use of status and exclusion in this way will be elaborated upon in section 2.2 (p.47). Since it is unlikely that girls in the UK are discriminated against in social contexts based on their gender, boys and girls were both considered to be of high (or equal) social status. At the very least, boys are as likely to be excluded by girls as girls by boys. However, since girls are more likely to be seen as lacking ICT skills, and as having a negative attitude towards ICTs, the assumption is that the girl gender is stereotypically associated with a low internet status and that the boy gender is associated have a high internet status.

This thesis will examine not only the differences in these processes between boys and girls but also whether these processes vary from those found in other groups.

1.4.4 Ethnic minorities

Eight percent of the UK population belongs to an ethnic minority, of which the majority is Asian or African Caribbean. The largest minority group is of Asian Indian decent (23% of all minorities) while amongst African Caribbean people (25%) the Caribbean group (12%) is bigger than those of other origins (ONS 2001). The Asian minorities are more dispersed in socio-economic terms but the African Caribbean minority belongs almost completely to the lowest socio-economic group (ONS 2001). For these reasons, their greater numbers on the one hand and their different socio-economic background on the other, this project will focus on both Asian and African Caribbean teenagers and not on other ethnic groups such as mixed ethnicity teens and Chinese teens.

In the UK the use of ICTs by minorities has been studied by the Department of Education and Skills (DfES). Their research shows that, while a vast majority of ethnic minorities perceive IT-skills to be of vital importance to their children, more than 60% have beginner or no internet skills (Owen, Green, McLeod, Law, Challis & Wilkinson (DfES) 2003).

However, not all ethnic minorities are similar and the ones that lag behind most in terms of access are African ethnic groups (Spooner 2001). Asian ethnic groups in the US seem to be ahead in access and compared to the white majority (Spooner & Rainie 2001). Research by Ofcom (2006a) showed that young Asian ethnic groups in the UK had more internet access and resources and that the African Caribbean groups were the most disadvantaged.

Owen, Green, McLeod, Law, Challis & Wilkinson (DfES) (2003) showed in their research that ethnic minorities attach more importance to their children having computer skills (93%) than parents of the White majority. There were also distinctions in the future intentions to get a computer; 60% of the non-white non-users express the need or intention to get a computer, while only a third of the white majority of non-users indicates having this need (Owen et al. 2003). There is little information in the

UK on whether this indicates that they will subsequently get an internet connection. although recent research by the Oxford Internet Institute showed that having a computer at home has become almost equivalent to having an internet connection (Dutton & DiGenarro 2005).

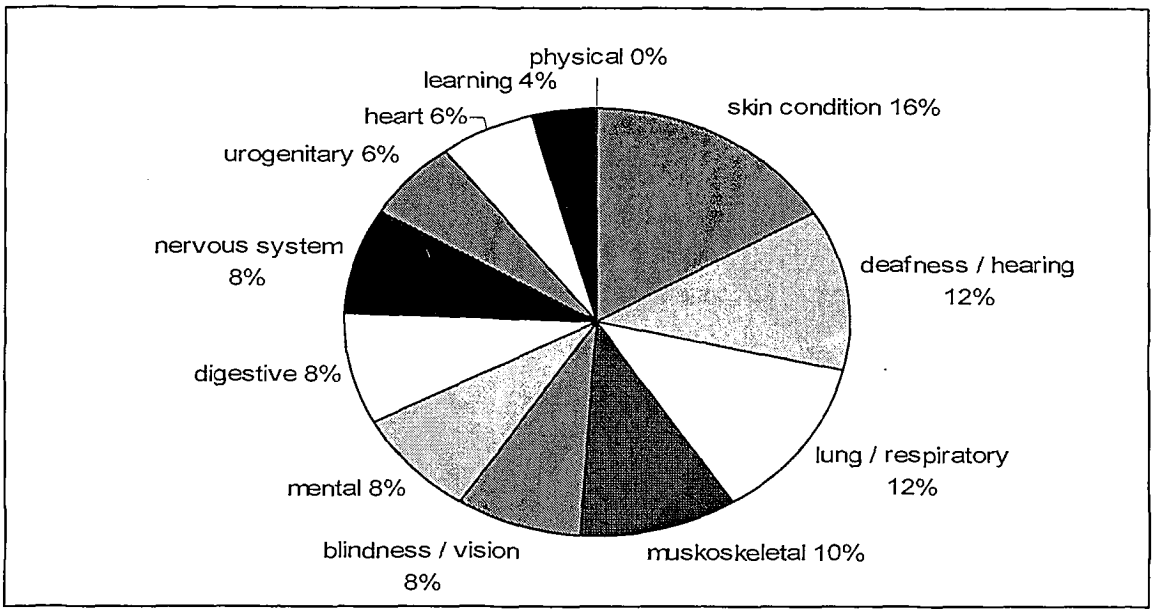
Both African Caribbean and Asian teenagers can be considered of lower social status since social discrimination against these groups is still prevalent (Karlsen & Nazroo 2002; Virdee 1995). However, Ofcom data suggest that Asian teenagers are of high internet status (e.g. they use the internet more extensively) while African Caribbean teenagers are more likely to fall into the low internet status category. In this thesis the processes within the Asian and the African Caribbean teens will be compared with those that take place within the White majority group and in the gender groups. The same procedures will be used as those applied to the comparison of use between boys and girls, between teenagers with different physical abilities and between those with different sexual orientations.

1.4.5 Disability

In the UK 18% of boys (between 15-19 years old) and 16% of girls report having a disability and 3% report having a serious disability (Nessa 2004)[3]. Figure 1.1 shows how different types of disability are distributed within the UK.

[3] If one excludes asthma which is often not considered to be a disability, approximately 10% of 0-19 year olds is considered to have a disability.

Figure 1.1 Distribution of disabilities in the UK for 0 to 19 year olds



Note I. Does not include asthma.
Note II. Percentages are those with disability out of total of children with disabilities.
Source: General household survey 2000 (Nessa 2004).

Most policy in relation to disabled and the internet has focused on providing technical tools to overcome physical restraints that disabled people might have (e.g. e-Envoy 2004). Notwithstanding this policy interest, internet research that includes disabled people as a group which might suffer disproportionately from digital exclusion is very scarce. UK research suggests that in terms of access, disabled people are in a disadvantaged position compared to others in society. They are, amongst other things, less likely to have home access, make more narrow use of the internet, and are less ICT skilled (Ofcom 2006d, see Dobransky & Hargittai 2006 for US data). Technical accessibility barriers, the lack of special software, and peripherals needed to make basic use of the internet, are some of the main reasons disabled persons use the internet less (Dobransky & Hargittai 2006). Designers often do not seem to consider the needs of disabled users, and technology moves at such a high pace that applications that help people with special needs cannot keep up.

In general it is assumed that while the internet offers great opportunities for the disabled group it is still the realm of White, male and able bodied individuals (Foley et al. 2003; Wajcman 2000). All of the above grants the disabled a low status in terms of internet use. Since disabled youth are also discriminated against by their peers in

other areas (see Flynn 1997; Slee 2001) the social status of these teenagers is also lower than that of their non-disabled counterparts. Dobransky and Hargittai (2006) argued that disability (in the US and elsewhere) is difficult to disentangle from a range of other socio-economic exclusion characteristics, often placing disabled young people in the 'multiple deprivation' category.

Following the same procedure as described for gender and ethnicity, a comparison will be made between other groups and the disabled on access and non-access related issues to study how different forms of exclusion relate to macro, micro and meso factors.

1.4.6 Sexuality

Although the internet is said to have special importance for the LGB community discriminated against in the offline world, not much is known about the history of internet access of LGB individuals. One of the reasons for this lack of information is that gathering data about sexual orientation is still complicated. Figures for how many LGB people live in the UK vary between 8.4% for men who have ever had a same sex experience and 3.4% being attracted to the same sex (see Table 1.1). For teenage girls these Figures are in general higher than for boys (Erens, McManus, & Prescott 2003; Rivers & Duncan 2002).

Table 1.1 Gay and lesbian experiences in older teenagers

	16-17 year olds		18-19 year olds	
	Sexual experience	Sexual intercourse	Sexual experience	Sexual intercourse
Boys	1.2%	1.2%	5.6%	2.3%
Girls	5.1%	2.5%	9.7%	4.6%

Source: National survey of sexual attitudes and lifestyles 2001 (Erens et al. 2003)

However, many are not willing to state sexual orientation even when anonymity is guaranteed (Arabsheibani, Marin & Wadsworth 2001). The lack of Figures on the use of the internet by LGB individuals is mostly related to these privacy issues and to a focus on topics that are only tangentially related to the use of the internet by this group. A review of the academic literature shows that most existing studies are centred on HIV/AIDS and sexual health education (Elford, Bolding, Davis, Sherr & Hart, 2004a-b; Kalichman, Weinhardt, Benotsch & Cherry 2002; Kalichman,

Weinhardt, Benotsch, DiFonzo, Luke & Austin 2002; Ross, Tikkanen & Mansson 2000). Another branch of research relates homosexuality and the internet to offline topics of sexuality, often including it while discussing pornography and paedophilia (Halkitis, Parsons & Wilton 2003).

It is unclear if perceptions about internet use by LGB groups exist to the extent that they exist for, for example, gender or ethnic differences. It is also unclear whether or not the internet offers special opportunities (apart from sexual ones) to LGB groups that would be unavailable through offline services or environments. Therefore the status of LGB in relation to internet use is unclear, but assumed to be high for reasons detailed in section 3.2.1. Due to discrimination against this group in wider society their social status is considered low.

1.5 A brief overview of methodology

An approach that aims to compare the processes underlying internet use within and across different groups requires the use of the same methods and instruments for all groups. In previous studies different measures were used for different groups or methods were applied that did not allow for this type of comparison. To be able to study the different aspects of inclusion at a micro- and macro-level and to study both quantity and quality of internet related behaviour and opinions a triangulation of methods is necessary.

In this thesis the combination of qualitative and quantitative methods allowed the creation of a more detailed picture of the processes that lead to certain uses and opinions of the internet and to relate these to exclusion. Nuanced perceptions about the internet and its use were obtained through qualitative interviews, model building and testing were done through a survey, and the causal effects of context on internet use were investigated through experiments. This triangulation of methods is reflected in the three stages that this thesis consists of.

- *Stage one*: Opinions and experiences of vulnerable groups (interviews)

Nine exploratory interviews were conducted with representatives of disabled, ethnic minority and LGB groups. The main purpose of these interviews was to understand

what the issues are that matter most to these groups (Flick 2000; Johnson 2002; Jovchelovitch & Bauer 2000; Kvale 1996). This stage investigated the micro-level processes of opinion formation and asked the participants to reflect on macro-level causes of exclusion.

The question asked at this stage was: Q1.5 *Which issues are raised by socially excluded persons in relation to internet use?*

- *Stage two*: Comparison of internet use processes within and between groups (a survey)

At this stage teenagers from different social groups are surveyed and compared based on their differences in internet uses and attitudes. In this survey macro-, meso- *and* micro-level factors will be analysed to explain the processes behind internet use and attitudes in individuals of different groups. This comparison is conducted using descriptive statistics and model based methods such as path-analysis.

The two main questions asked in this stage were: Q1.6 *To what extent is internet use explained by macro-, micro- and/or meso-level factors?* Q1.7 *Are the processes behind internet use different for different excluded groups?*

- *Stage three*: Context effects (an experiment)

In order to study the effects of a single factor on behaviour it is necessary to test this in a controlled environment (Montgomery 2000). In this experimental third phase of the project individuals were asked to perform tasks on the internet and answer questions about their use in a variety of contexts. The effect that these different contexts had was then monitored. The aim was to understand whether external factors can be changed in such a way that those groups who could be considered excluded will behave and think in a way that brings them closer to those groups who are considered included.

The main question asked in this stage was:

Q1.8 *Can internet use and attitudes of socially excluded teenagers be changed by varying the context of their internet use?*

A more detailed description of the methods is given in Chapter 3.

1.6 Chapter summary

Rooted in political and academic discussions of the digital divide, this thesis examines different types of internet use and relates these to social vulnerability. The fundamental premise of the digital divide debate is that unequal opportunities to access and use the internet could mean that vulnerable groups are excluded from participation in economic, social and cultural aspects of society. Therefore understanding the processes that underpin internet use by vulnerable groups is considered relevant to understanding broader processes of social exclusion.

Most digital inclusion policy has focused on either socio-economic macro- or individual micro-level factors as explanations of internet use but has ignored interactions between the two. Similarly research has largely failed to investigate the influence that social identity or meso-level aspects might have on these macro and micro processes behind internet use. This thesis investigates the value of using a combination of micro, meso and macro elements to analyse digital exclusion.

The first aim of this study is to collect original data about the internet use and experiences of vulnerable groups of teenagers who are argued to benefit from access to the information, communication, and entertainment possibilities offered through this medium. These data will support the testing of a comprehensive theoretical framework that incorporates micro elements such as confidence, macro elements such as resources, and meso elements such as social identity. The assumption underlying this approach is that individual perceptions of, and experiences with, the internet interact with broader social structures in determining internet use by vulnerable groups.

This thesis also advocates a broader methodological approach to internet research by examining how a combination of different analytical techniques could lead to new

insights. Path modelling and experimental techniques will be used to get a detailed view of the variety of processes that lie behind the use of the internet by different social groups.

The data gathered in this thesis through these methodologies should facilitate evidence based policy making by offering a detailed view of internet use in different social groups. A more in-depth approach to understanding these different processes is necessary because digital inclusion policy does not usually distinguish between different types of exclusion when designing interventions that attempt to diminish inequalities in internet use and opportunities. In past research differences between groups have been noted but very little evidence exists about if and how the processes underlying internet use vary for different groups. This is reflected in a homogeneous, but probably ineffective, policy that bundles all vulnerable groups together.

A focus on macro factors has led policy-makers to concentrate on providing access as the solution to digital exclusion, often failing to address issues that might instead be related to social constructions of identities and individually held perceptions of technologies. In this chapter it was argued that by comparing different groups using the same measurements, the thesis will be able to offer insight into different types of internet inequalities and the processes that lie behind them. This thesis does not only compare between categories (e.g. boys with girls), but also compares processes in groups who are vulnerable on the basis of one characteristic (e.g. gender) with processes in groups that are considered vulnerable for other reasons (e.g. ethnicity, disability, sexual orientation).

A brief overview of vulnerable groups in the UK presented at the end of this chapter showed that there are considerable differences between groups in internet use. Ethnic groups vary in their internet use but it is ambiguous what causes these differences. It is also unclear whether girls are really left behind, or merely differ in their internet use from boys, and it remains a matter of popular supposition, but not empirical investigation, whether the internet is really an opportunity for equality for gay people.

The starting point of this thesis is that these differences in internet use might indicate that different processes lie behind the internet use of women, ethnic minorities,

disabled, and non-heterosexual (LGB) individuals. This first chapter concluded by discussing how this thesis intends to examine these different processes through interview, survey and experimental techniques. The use of these methodologies allows for an approach to digital exclusion from different theoretical and methodological angles.

In the subsequent chapters of this thesis the issues brought up in this first chapter will be further explored theoretically and empirically. Chapter 2 reviews the academic literature in relation to internet use and vulnerability. Chapter 3 describes the theoretical model underling this thesis and presents the hypotheses that can be derived from it. The chapters that follow these two theoretical chapters examine the results of the survey conducted with 730 teenagers in London. In Chapter 4 the explanatory power of the digital divide or macro approach to internet use by different social groups is tested, while in Chapter 5 the applicability of the micro approaches is studied. This is followed in Chapter 6 by an examination of the survey data through social identification and stereotyping (meso) frameworks. The final chapter based on the survey is Chapter 7 which evaluates the value of combining the different models presented in Chapters 4 to 6. Chapter 8 will discuss the results of the experimental part of this thesis to investigate whether internet use of teenagers can be changed by varying the environment in which they use the internet. The thesis ends in Chapter 9 with a discussion of the implications of all these findings in relation to the literature and the theoretical framework.

2 Review of the literature: Internet use in context

Tolstoy (1875-1877) famously started his novel *Anna Karenina* with the following phrase:

"Happy families are all alike; every unhappy family is unhappy in its own way".

A similar argument can be made for social and digital exclusion; there are many ways in which people can be excluded while the included are perhaps more alike in their behaviour. Right now this assumption is mere speculation and the perspective taken in this chapter is that there is little understanding of the complexity of processes that lead to digital exclusion or inclusion.

This chapter reviews theories which are key to explaining digital exclusion and internet use, and support the framework presented in Chapter 1 which argued for the importance of using an approach that combines macro-, micro- and meso-level theories. The main theories at each level are discussed and reviewed in this chapter.

The chapter starts with a critical account of the policy perspectives on the digital divide which are considered weak because of their focus on access and resources. This discussion of macro digital divide frameworks is followed by a discussion of theories that could explain that which takes place at a meso-level. The main argument in this second part is that people's internet behaviour and attitudes are related to how they perceive themselves as members of social groups. Social Identity Theory (SIT) and Feminist approaches to technology form the foundation for an exploration of how group membership and stereotypes can be considered important determinants of behaviour in those areas for which access and resources do not offer a satisfactory explanation. The last section of this chapter discusses traditional micro-level theories such as uses and gratifications (U&G) and certain computer mediated communication (CMC) approaches. These frameworks focus on explaining the behaviour and attitudes of individuals independent of their social group or social grade, and therefore offer an account of agency in internet use.

All the theories presented in this chapter examine how people use media or form opinions about themselves as media users. Different perspectives often exist in isolation possibly because they have been proposed by different disciplines.

Sometimes they contradict each other in predicting who uses the internet in which way, but more often they actually assume that different factors determine the same use.

The argument is made that only a combination of these theories will be able to address the following question:
Q2.1 *Can factors of exclusion that are considered structural and part of society at a macro-level be influenced by processes that take place on a micro- or meso-level?*

2.1 Different (macro) perspectives on digital exclusion

In general, those studying the digital divide have done so from an economic, sociological or cultural studies perspective. Within the economic framework the emphasis has been on how market structures and characteristics influence the diffusion of the internet in different nations and social groups. More relevant to this thesis, which tries to explain how individual internet use is determined by an interaction of macro-, micro-, and meso-level factors, is the other macro-level strand of research which has analysed how socio-cultural forces shape the way in which technology is used (Matei & Ball-Rokeach 2001; Anderson & Tracey 2001). According to this research, the relationship between people and media is shaped by an interaction of economic, technological, cultural and social factors (Kvansky 2006; Mansell 2002).

The question that is asked in this section is:
Q2.2 *How have macro theoretical approaches to the digital divide debate influenced policy making and ideas about internet use by vulnerable groups?*

All these perspectives take as a starting point the broader social forces and the influences these have on groups of individuals with certain demographic characteristics. Within the digital divide debate these approaches are often used to explain why some have access to ICTs and the internet and why others do not. The main conclusion reached by using these macro approaches is that some groups lack the resources and skills necessary to get an internet connection and use the internet (see also Norris 2001; Warschauer 2002). This approach to digital exclusion brushes

over the possibility that excluded families are excluded in a myriad of different ways and, if Tolstoy's idea is valid for the online as well as the offline world, it similarly ignores whether the included are equal in their 'inclusiveness'.

In studying the digital divide between nations most studies have focused on the unequal distribution of infrastructures in relation to the internet and tried to indicate how to close this gap in access to the digital highway (APEC 2001; World Bank 1999; National Telecommunications Association 2000; Kirkman, Cornelius, Sachs & Schwab 2002). The most popular solutions offered to solve unequal distribution between nations are subsidies or material support from the World Bank, NGOs and major international telecom companies.[4]

On a national level research focuses on the differences between groups within societies. For example, in the US Jung, Qiu, and Kim (2001) showed that different ethnic groups have different levels of access and use. Other studies have shown differences in access for women and the elderly (GVU Centre 1998; Loges & Jung 2001; UCLA 2001) and data from the World Internet Project seem to indicate that some gaps (i.e. gender) are closing while others are not (i.e. ethnicity) (Cole 2004; Dutton, DiGenarro & Millwood-Hargrave 2005). In the UK, where women and men now have almost similar access levels, some ethnic minorities still seem to lag behind (e-Envoy 2004; Ofcom 2006a; ONS 2004). In relation to general access there have been optimistic voices saying that, at least in the European Union, everyone will have access within a foreseeable number of years. The UK government has made it clear that it intends to provide access for all citizens who want to have access and has recently stated that 99% of UK citizens should now have access to a broadband connection (e-Envoy 2004; Strategy Unit 2005).[5] For those who do not have home access free broadband access is provided at public libraries, schools or work places. Based on these Figures the UK government concluded in 2003 that "the race for physical access is over" (E-Envoy, p. 8).

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[4] For a more detailed discussion of the international effort to bridge the digital divide between nations see www.digitaldivide.org.

[5] Recent data show that 32% of UK households have a broadband connection (Eurostat 17/5/2006) and that 64% of all connections are broadband (ONS 2006).

One result of wide spread internet access in the UK could be that the traditional barrier of financial resources ceases to be important in determining internet use. Dutton and DiGenarro (2005) found that the main reason for not using the internet is no longer a lack of access but instead a lack of interest. They concluded earlier that

> "People who don't use the Internet don't see how it will help them in their everyday affairs [....] Among the two-fifths who do not use the Internet, half are informed but indifferent; they know someone who could send an email or get information for them but have not bothered to ask for this to be done" (OxIS 2003, p.2).

However, in a government survey, 42% of the non-users said that their main reason for not using the internet is that they do not have an internet connection and 37% indicated that they lack the skills or knowledge to use it (ONS 2004). These Figures show that a lack of interest cannot explain low use even when access to the internet is relatively universal.

The UK government's latest report indicates that providing universal access might not be sufficient; it argues that the government's responsibility is to create an environment in which every individual has the confidence and skills to use new technologies (Strategy Unit 2005). This perspective seems to distance itself from the access oriented focus of previous policies and implies a change in focus from providing access to providing opportunities to get the most out of the internet. Since research has rarely investigated how these micro-, individual level issues work across groups, it is difficult to draw conclusions about how policy that focuses on individual confidence can be implemented.

Due to the framing of this debate in terms of divides and gaps most studies centre on the disadvantages of being excluded. Notwithstanding this focus on negative aspects of the spread of the internet, there are a few studies that indicate potential advantages of being online. Foley, Alfonso and Ghani (2003) found that the internet helps individuals from disabled and ethnic minority groups to participate more fully in society and solve problems of isolation. They concluded that, while there was much positive curiosity in these groups regarding the internet, there were also incorrect ideas about the costs and the efforts that it took to become 'connected'. Others have argued that the internet does more than just help minorities to catch up with the

majority. Mehra, Merkel, and Peterson-Bishop (2004) argue that the internet provides a space for these individuals to meet others like them and to build up social networks through the internet, thus giving minorities an advantage over the majority groups who have weaker identity based networks.

Underlying traditional approaches to the digital divide is the idea that the internet is a beneficial tool that has the same (positive) effects on everyone. This utopian techno-determinist[6] point of view has been criticised extensively by social-constructivists (see Kvansky 2006; Selwyn 2003, 2004a-b; Van Dijk 2005; Warschauer 2004). Lessig (2006), for example, argues that social values are built into the construction of the source code for the internet and that this limits how people use the internet. Pinch (1996) similarly argues that technology results from processes of social-construction which are often biased to exclude certain groups in society. His argument is that the ways in which technologies, such as the internet, are and can be used are determined both by the way in which humans construct the technologies and by the ways in which people decide to integrate the technologies into society. Technologies are therefore not neutral with uniform effects, but are embedded in existing social processes and structures.

The prevalence of macro perspectives in digital divide debates could be another reason for the belief that technology is a uniform solution to social problems. These macro perspectives tend to describe general differences between groups or regions and not the social and individual processes that shape the use and 'construction' of technology. Macro perspectives tend to overlook how individuals and groups of individuals interact with media differently in different contexts (Lievrouw & Livingstone 2002). They emphasise the restrictions and opportunities of technological systems on a larger scale, thereby neglecting the interaction between the individual and these broader social forces.

Based on a review of digital divide studies, Foley, Alfonso, and Ghani (2002) argued that there was a lack of user-focused research. They concluded that most projects done with less frequent users of the internet had preconceived ideas about what these

[6] i.e. the internet is inherently useful; making people aware of this is key to solving the digital divide (see Loader 1998 and Kitchin 1998 for a more detailed explanation of this argument).

people should be or could be doing with the internet. These authors think that it is impossible to address issues around the digital divide without asking users which problems exist or without looking at the circumstances that lead to their (non)use. In the last few years there has been a growth of user focussed research which has led to a greater understanding of how certain social groups differ in their internet use and attitudes. In this thesis it is argued that, without nuanced user focused research which incorporates a range of different groups, policy-makers cannot truly understand how these groups will or will not benefit from ICTs.

2.2 Definitions of inclusion

The concepts of exclusion and inclusion are of great importance in the discussion about the digital divide. Notwithstanding this importance, few studies or government documents have actually tried to define what it means to be included. It seems logical to determine first how inclusion can be measured and defined before discussing the effects of the internet on inclusion and whether exclusion means the same for everyone. While within the digital divide debate exclusion has often been defined as black and white (i.e. access or not), the sociological literature on exclusion has a more complex set of views on what this means.

The question that this section tries to answer is:
Q2.3 *Which definitions of exclusion are useful in studying digital exclusion?*

Most academics argue that exclusion is a multidimensional construct. In an attempt to simplify the great number of different dimensions proposed by various scholars these can be grouped into four categories of exclusion: civic, economic, cultural and interpersonal (socio-psychological) aspects of exclusion (Anthias 2001; Chapman et al. 1998; Commins 1993; Durieux 2003; Phipps 2000). The type of exclusion from society that this thesis focuses on is the interpersonal form of exclusion as formulated by Durieux (2003), which might be described as social discrimination.[7] This choice was made because this kind of exclusion is likely to play a bigger role for teenagers

[7] Social discrimination similar to interpersonal exclusion refers to the existence of stereotypes or discrimination as regards a group's skills, attitudes and lifestyles and is not directly related to differences in economic, educational or civic circumstances such as lower wages, no access to private education or no representation in government (see also Durieux 2003).

than economic or civic forms of exclusion. Most young people are excluded from civic and economic participation in the traditional sense. Differences in civic and economic status in everyday interactions with others can therefore be considered less influential in terms of their identity and inter-group processes. Young people are more likely to judge each other on the basis of the social status of the groups that they belong to. The extent to which they are discriminated against and excluded from social networks at this stage of their life is likely to influence processes of identity formation (see also section 2.3.2, p.51).[8]

It is undoubtedly true that the different dimensions of exclusion are related and that a person excluded in one of these is likely to be excluded in the others as well, although not necessarily so. Kvansky (2006) stresses that vicious cycles of multiple deprivation make it difficult to disentangle different types of social exclusion. She also argues that the way in which digital inequalities are rooted in a wide variety of other disadvantages is often forgotten in interventions that offer a 'technology centric' solution to an inherently social problem.

Sen (1999) argued that everyone has the capability to make informed choices but that certain environments can create the substantial freedom in which this choice is really free. Selwyn (2004a) and Durieux (2003) stress that, in a society that puts ICT use at the centre of its activities, not only economic capital, but also cultural and social capital are important to create the opportunity for free choice, and that the latter two forms of capital are often ignored in policy making. Selwyn also suggests that the effects of ICTs should be studied in relation to how they influence all these different capitals and capabilities. Like most policy-makers however, he does not specify what it means in practical terms to be included when it comes to internet use and whether being excluded means the same to everyone. The question that remains unanswered is what kind of internet use or attitudes show that a person is a fully integrated and equal member of the internet society?

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[8] This is a social-psychological approach to exclusion based on interactions between groups, which gives importance to civic and economic exclusion only when they are linked to different perceptions of status in everyday interactions between groups. Omitting these broader socio-economic and, perhaps, less subjective types of exclusion could unintentionally downplay the importance of broader issues of power that become significant when looking at exclusion in society at a macro level or when studying adults.

What digital inclusion means for individual members of social groups should be answered at the micro-level of analysis. On a micro-level the questions focus on skills, attitudes and psychological characteristics (e.g. Kraut et al. 1998a-b, 2002; Papacharissi & Rubin 2000). On a macro-level one would ask how use is related to socio-economic and socio-demographic factors (e.g. NTIA 2000; Van Dijk 2005). There have been studies that combined macro and micro perspectives (e.g. Stewart 2003) but both approaches assume that exclusion is constant and that the same person acts in the same ways in all contexts based on the stable feature of either their social (i.e. macro) circumstances or personal (i.e. micro) characteristics. These frameworks ignore, the fact that individuals are more than either individuals with fixed personalities or victims of their social circumstances; a long history in social-psychological research shows that people are members of a variety of groups of which the boundaries and status change constantly. Instead of 'blaming society' or 'blaming the person' it could be useful to see how people change their position as persons in society by attaching themselves to different groups in different contexts. This gives both policy-makers and individuals more flexibility in relation to changing aspects of inequality of digital inclusion (Abrams, Hogg & Marques 2005).

2.3 Social identity framework: Identity, exclusion and media use

The bases for social discrimination are the different social groups a person belongs to which are in turn strongly related to how a person thinks of him or herself. In other words, identity has individual (micro) aspects but, as will be addressed in this section, it is simultaneously constructed by the social context (meso aspects) a person finds him or herself in. This section discusses theories of identity and their relationship to media, computer and internet use through the frameworks of social identity theory (SIT), social identification/deindividuation (SIDE) models, self-categorisation theory, Feminist approaches to stereotyping and identity construction, and self-efficacy studies. All of these frameworks carry an argument about social identity development and most of these can be connected to media use.

The question that this section addresses is:

Q2.4 *How do socio-psychological frameworks define exclusion?*

2.3.1 A social-psychological approach to exclusion

Durieux (2003) describes 'people's "self-designation" as included or excluded in their everyday context[s]' (p. 12). The use of the concept of context and of the idea of self-designation gives this social identity theory (SIT) approach the advantage of flexibility because it assumes that different individuals have different perceptions of the group they belong to and that in certain contexts they might feel more excluded than in others (Tajfel & Turner 1986). SIT is in essence a meso framework because it exposes the relationship between the individual and the group and focuses on how this relationship changes in different contexts. Applying SIT to internet studies thus facilitates the incorporation of both meso (social categories) and micro (individual agency and identity) perspectives in understanding of use and attitudes of the internet through examining how they are linked to context and group membership (see also Stets & Burke 2000). SIT also hints at different types of exclusion - context within this framework can be physical but also social. For example, a person might consider their group excluded socially because they are discriminated against, but included digitally because they have acquired special skills or circumstances that make them experts online.

In this thesis the multidimensional SIT approach to exclusion will be used, that is exclusion is argued to depend on group membership, social context and personal circumstances. The same person can be excluded in one situation and included in another depending on which frame of reference is used. In other words, traditional socio-economic exclusion categories are important but they have to be studied taking broader social contexts into consideration.

There are other theoretical social exclusion frameworks that use a mixture of sociological and psychological perspectives. For example, traditional sociological approaches build on alienation theory (Acevedo 2005; Seeman 1983) and the related structuration theory (Bryant & Jary 1997; Giddens 1986). Both argue that social structures interact with psychological characteristics to create exclusion of certain groups. They are criticised for being too psychological *and* too macro (Seeman 1983) by ignoring the smaller social groups that are part of people's everyday lives and fluctuations in exclusion patterns. SIT offers a bridge at a meso-level between

individual behaviour and social structures by arguing that people form ideas of themselves based on their membership of a variety of social groups. This focus on smaller groups and group perceptions makes SIT as a framework adaptable to the everyday situations that teenagers find themselves in.

The next section will address how social identities are constructed, diverging for a few pages from the main argument of this paper by giving an overview of theories that focus on how identities are perceived and constructed by individuals. The literature on social identity development will then be connected to the Feminist stereotyping literature on media use by vulnerable groups.

2.3.2 Identity development

After almost half a century of research into identity development, there is agreement upon the idea that identity development consists of four phases labelled diffused, foreclosure, moratorium, and achieved identity (Marcia 1980; Erikson 1980; Waterman 1982). This framework assumes that very young children are not aware of the existence of different identities and have no desire to establish a stable identity. This phase of diffused identity is followed by a commitment to one preferred identity without considering realistic alternatives. In adolescence this leads to a crisis in identity (moratorium) where the teenager is unsure of how alternative identities fit their person. This is resolved by achieving an identity in the most stable of all phases where the person commits to one identity after having considered the alternatives. Scholars interested in marginal identity formation have classified the development of minority identities along the same lines but argue that minorities are more likely to suffer crises in the moratorium stage because the identity that they are supposed to commit to does not seem a positive choice in comparison to the identity that they choose in the foreclosure stage. The discrepancies between perceived and ideal self (Makros & McCabe 2001) and stereotypical thinking in terms of in-groups and out-groups are said to be greatest during this moratorium stage (Streitmatter & Pate 1989). In general young minorities are assumed to start with no real concept of or interest in this identity, they then go through a phase where they assume a majority identity, followed by an awareness and a growing importance of their minority identity, finally reaching a stage at which they have an established sense of self within which the

minority identity plays an important role (Makros & McCabe 2001; Streitmatter & Pate 1989; Phinney 1989).

Most theorists agree that for minorities the final stage (achieved identity) is reached during adolescence and early adulthood (Phinney 2000; Marcia 1980; Steinberg & Lerner 2004). Various studies on sexuality show that the majority of young people have come out or are certain about their sexuality by the time they finish secondary school (Stevens 2004). The same can be said regarding the establishment of a sense of the importance of gender, ethnicity and disability in the identity of young people. This of course does not mean that the outside world at that point becomes more friendly or social exclusion more acceptable (Stevens 2004). Phinney (2000), whose work focuses on ethnic minorities, stresses the importance of the interaction between individual freedom and what the circumstances allow in creating an achieved identity

> "... the typical developmental progression and the individual's choices are both shaped by events and opportunities afforded by the context. Societal norms and the historical moment set the limits for individual choice; they make some identity choices easy and others virtually impossible" (Phinney 2000, p. 30).

There is a limited flexibility to these developmental models because they assume chronological order in identity development and a stable identity at a later stage. This thesis will look at the relationship between social identity and internet use in what is traditionally considered to be the final stage of identity formation. By looking at 16 to 19 year olds the project includes both those who are more confident in their sense of self (have achieved identities) and those who are still struggling with their conflicting identities (moratorium stage of development). Research has shown that at this age ethnic minorities are more likely to be in the moratorium phase, while girls are more likely than boys to have achieved identity stability (Waterman 1982), and other differences might exist for different vulnerable groups.

Identity and internet use

Kennedy (2006) argues that internet research has largely overlooked the importance of offline identity and its influence on internet use and participation. She argues that a focus on online anonymity caused internet research to see online identity as completely fluid and separate from the social identities that influence the 'real' world. Research by Gross (2004) showed that teenagers change their personal information

online more often to play jokes on friends than to adopt a different identity and that when this does occur identity play is 'developmentally specific'(p. 635) and related to offline realities. Valkenburg, Schouten and Peter (2005) showed that young people experimented with their identity to test others' reactions, to overcome shyness and to exchange information to speed up relationship development. In both studies offline needs to test and develop relationships with others were strongly related to online identity play and not as some have argued an escape from or separated from 'real life'.

According to McKenna and Bargh (1998) use of the internet by vulnerable groups depends partially on whether their identity is concealable or not in real life (see also Frable 1993). They showed that a concealable identity such as being homosexual makes the internet more important in identity building, and that those with concealable identities who use the internet for identity purposes feel more comfortable and have a greater feeling of belonging than those who use it less. Those with a concealable identity turn to the internet to find people like them because in real life it is difficult to tell by the physical appearance of the other whether the person belongs to the same group. When an identity is very visible in real life, such as when a person has a visible physical disability, the internet becomes less important and individuals are more pressed to build their identity offline even though it might be difficult to get together with others like them.

Thus identity development and the impact of a medium like the internet on identity depend on whether the person is from a socially excluded or included group and whether their identity is visible or concealable.

2.3.3 Identity and context

The theories presented in sections 2.3.2 assume a linear development of identity and a stable identity towards the end of adolescence. However, there are scholars who disagree with the concept of a completed identity in adults (Calhoun 2001; Turkle 1997, 2000; Yi & Shorter-Gooden 1993). Others agree that a stable sense of identity is established in late adolescence but challenge the assumption that identity development has similar trajectories for different groups. Lytle, Bakken, and Romig (1997) argue that women have different identity development patterns from men and

that the existing models are not flexible enough to incorporate or look at these differences (see also Sorell & Montgommery 2001).

Several theories, like SIT and the social constructivist frameworks, assume that identity is more flexible than these developmental models suggest and argue that identity decisions are made on a daily basis by those who are no longer adolescents. Many studies on ethnicity and sexuality confirm these ideas, particularly focusing on the premise that a person has a variety of different personal and group identities that vie for attention and importance (Stevens 2004; Yi & Shorter-Gooden 1993; Williams & Thornton 1998).

The question that is therefore asked in this section is:
Q2.5 *Which factors influence a change in a person's perceptions of his or her identity and behaviour?*

SIT also assumes that an individual's perception of status is not a fixed concept, but that it can change according to circumstances. Its predecessor, expectation state theory, described this phenomenon and its causes. This theory, developed by Berger (1972), argues that context determines which characteristics of a person are dominant in decision making processes. Context in expectation state theories is most often defined as the other people that are involved or present when a person is performing a task. Which of the social reference categories is important depends, according to expectation state theory, on the expectations both of what the task at hand entails and about the status characteristics of the other people involved in the decision making process.

An important element of expectation state theories is that people rank social groups according to status (Ridgeway & Berger 1984; Berger, Rosenholtz & Zelditch 1980; Wiesband, Schneider & Conolly 1995). Expectation state theory also introduced the idea of multi-level statuses where a person might be from a low status group but of higher status within that group. Haddon (2000), when talking about relative deprivation and social exclusion, points out that exclusion can be multilayered:

> "...disadvantage could in itself be partial: we can be disadvantaged in some respects while not in others [....] This 'multidimensional aspect of

> disadvantage' [...] is perhaps better captured under the umbrella term of social exclusion..." (p. 389).

Status is thus the perception within individuals and society of the characteristics of members of a group within a certain context. In order to clarify the significance of status in relation to identity, Hollingshead (1996) defined it in the following way:

> "Status embodies those characteristics that lead groups to think about members in terms of their personal characteristics and what contributions they can make to the task at hand. Such characteristics include but are not limited to expertise, tenure, gender, age, and ethnicity" (p.194).

This definition subtly criticises the fact that status based studies typically cover only a limited number of qualifiers of exclusion; they tend to focus either on differences in decision making processes between male and female participants or on the difference between older and younger students (e.g. Flanagin et al. 2002; Spears & Lea 1994). Few studies investigate the combined effect of both nor do they try to compare the varying effects of different kinds of exclusion. This has led to the transferral of conclusions about the effect of social exclusion in one group and one context to other groups and contexts without specific evidence based on research with these groups.

One of the arguments this thesis makes is that exclusion might lead to one kind of behaviour in one group and another kind of behaviour in another group (Jeffres 2000; Kim 1994), and that it is necessary at this point to start thinking about exclusion in a different, more diverse way. Since exclusion is a blanket term which encompasses different social, economic and personal circumstances it might be associated with internet use in completely different ways. For example, both Asian and African-Caribbean individuals are considered excluded based on their social status but their internet use is very different; while Asians in the UK are the most connected ethnic group, even more so than the White population, the African Caribbeans are the least connected (Owen et al. 2003), and this cannot be ascribed solely to socio-economic differences. The consequences of social exclusion can also be expected to be different for disabled people than for women and might be even more complex to determine for disabled women. For example, women's lower status might lead them to think that they are not good at using the internet compared to men and think that internet content is not directed at them. Disabled internet users might expect the internet to provide them with opportunities not presented to them before but become frustrated with the

inflexibility of the technology. Therefore it would be equivocal to generalise the effect of social exclusion to digital exclusion and it might be relevant to think about social and digital status as two separate, but related, concepts.

The idea that there are more similarities in internet use amongst low status groups than there are between low and high status groups is also contested in this thesis. Instead it is argued that social identity changes when context changes and that therefore the effects of social status on internet use are not constant.

2.3.4 Social identification/deindividuation (SIDE)

To address changes in social identities, SIT incorporates three components of which *self-categorisation* is the cognitive (a person's rational evaluation about whether they belong to the group), group *self-esteem* the evaluative (is the group "good or bad") and *affective commitment* the emotional component (how important is the group to the person) (Ellemers, Kortekaas & Ouwerkerk 1999).

The SIDE model emphasises the importance of self-categorisation and investigates the conditions under which different self-categories will be salient and those under which behaviour normative to that category will be appropriate. SIDE models incorporate SIT's fluid conception of status where a person's identity is made up of different layers and in which a certain layer can become more or less important depending on the circumstances. This means that a person can have different status levels according to the context the person finds him or herself in (Spears, Postmes, Lea & Wolbert 2002). The SIDE model argues that when a personal category is more salient, that is when the person is addressed as an individual, membership of a group becomes less important and other (personal) factors will determine behaviour. However, when the social category is salient, that is the person is addressed as a member of the group, group membership becomes more important and acts considered appropriate to that group will be carried out (Postmes et al. 2001; Spears & Lea 1994). In explaining how these processes work the SIDE model incorporates both a cognitive element and a strategic element. The cognitive element is the salience of an identity or self-category of the communicator at the time of interaction and the strategic element is the way in which a proposed or intended behaviour is considered

to comply with the identities available to the communicator (Flanagin et al. 2002; Hancock & Dunham 2001).

Both qualitative and quantitative research show that the form identity expression takes depends on the context in which the individual finds him or herself (Finlay & Lyons 2000; Verkuyten & De Wolf 2002). This context might facilitate or limit the expression of group characteristic attitudes and behaviours by the individual. One of the ideas within SIDE models is that anonymity is a condition under which social identity and group membership become salient (see also Joinson 2001). Anonymity within this paradigm is interpreted as a situation in which the person is not identified by personal or group characteristics and in which the person has to make a decision about how much of themselves they want to reveal. Anonymity can refer both to the group, one does not know anything about the composition of the group, and to the person, nothing is known about the person or the other persons in an interaction. When no information is available about the individual the person is said to be in a deindividualised or depersonalised state (Lee 2006).

This type of anonymity is relatively easy to manipulate using computers because, when people interact with each other through on screen text, personal or group information needs to be explicitly given in writing or images. This medium has therefore been used frequently to test the hypothesis that anonymity creates the conditions under which group norms become more important to the individual than his or her personal characteristics and norms (Douglas & McGarty 2001; Ibarra & Galimberti 2006; Postmes, Spears & Lea 1999; Postmes, Spears & Lea 2000; Spears, & de Groot 2001). In a study that addressed the issue of time within this framework, it was shown that group norms become increasingly important as interaction time increases (Postmes, Spears & Lea 2000).

An internet example would be an Asian teenager entering a chat room where he does not know anything about the other participants. If this teenager decides to stay in the chat room then it becomes important for him to understand the group norms within the chat room. The more often he returns the more important it becomes to identify as a part of (one of) the group(s) in the chat room so that he can interact with others. Sometimes group membership can be identified by the theme of the chat room,

sometime it needs to be deduced from conversations and descriptions of the participants. If all the participants identify themselves by ethnicity, then the teenager's ethnicity will become an important determinant of behaviour within that chat room; if instead sexuality is an important aspect of the chat room then norms related to his/her gender and sexual orientation will guide his/her behaviour.

This example illustrates one problem with SIDE theories, namely the narrow definition of anonymity. In this example anonymity seems to have different levels, anonymity can signify other chatters not knowing the name, age etc of the person but still knowing that the person is Asian (see also Kennedy 2006). The anonymity of personal information simultaneous to the identifiability of group information is argued to be one positive aspect of anonymity on the internet especially for LGB users (Tikannen & Ross 2003; Kwong-Lai Poon, Trung-Thu Ho, Pui-Hing Wong, Wong & Lee 2005; Lee 2005). Anonymity can however also be understood as ignorance about the person's ethnicity or sexuality while being aware of other personal information. The most complete form of anonymity on the internet is probably lurking; the internet user does not have to expose any details of him or herself and can gather information without others knowing that s/he is there. In the empirical work connected to this thesis four types of anonymity will be examined:

- *Personal* anonymity: the lack of information about personal details of the user such as name, address and physical appearance.
- *Group* anonymity: the absence of cues about group membership of the user, this includes information about gender, ethnicity, sexuality and disability.
- *Physical* anonymity: the person is alone while using the internet.
- *Social* anonymity: the person does not talk with others about his or her online activities.

Sassenberg and Postmes (2002) showed that awareness of the self and awareness of the group interact in producing behaviour. To make personal identity more salient they took pictures of the participants and, to make the individual group members more identifiable, they showed pictures of fictional group members with which the person communicated through a computer. Agreement with group members' statements, perceived unity of the group and consensus on a decision taken by the group were measured to see how personal anonymity and group anonymity would determine

group oriented behaviour. They found that those who were individually anonymous in an anonymous group condition and those who were identifiable in an identifiable group condition showed more influence of group norms. In conditions where the categorisation of the self did not correspond with that of the group, group norms seemed less influential. However, research by Ellemers and Van Rijswijk (1997) showed that in different contexts minority or low status groups were more likely to act on group norms and high status group members more on personal norms, thus demonstrating that anonymity can have different impacts depending on group status.

A recent study by Lee (2006) showed that depersonalisation made the perception of group norms more extreme (that is stereotypical) and increased conformity to these norms to a greater extent in women than in men. Lee suggests differentiating SIDE hypotheses according to offline group membership. Whether and how ideas about the relationship between anonymity and offline social identity can be transferred to internet use remains unclear.

The SIDE frameworks assume that social contexts increase or decrease the importance of group aspects of a person's identity and that computers can create these contexts. A gender specific task or topic, for example, might generate a gendered identity and therefore more gendered behaviour (Ibarra & Galimberti 2006; Thomson 2005, 2006). However, in fact, the reverse might also be true. A variance in awareness of different aspects of a person's identity might influence the ways in which a person uses these media. Self-categorisation and Feminist stereotyping theory can be used to hypothesise about how this could be explained.

2.3.5 Self-categorisation

Most SIDE studies use situations in which people have to interact or collaborate with others to reach certain goals. Within the framework of self-categorisation theory, direct interaction with others is not necessary for people to see themselves as a member of a social group and act accordingly, as it is in SIDE frameworks. This sets self-categorisation apart from Goffman's (1959) presentation of self framework which also assumes that people change the perception of themselves in different contexts. However, this change is due to a change in the implied audience for which behaviour is 'performed'. Identity in Goffman's theory is about expressing to others who one is,

while in self-categorisation theory a person imagines the self as part of a group of others to decide which behaviour is appropriate (Lee 2005). This makes self-categorisation theory a more appropriate framework in this thesis where internet behaviour is seen as resulting from and not leading to group membership.

Like SIT and SIDE, self-categorisation theory refers to the flexible nature of a person's identity (Onorato & Turner 2004). Self-categorisation theories assume that a person will activate different aspects or so-called categories of the self according to context and clues in the environment and in the self (Sani & Bennett 2001; Turner, Hogg, Oakes, Reicher & Wetherell 1987; Turner, Oakes, Haslam, & McGarty 1994; Young, Van Knippenberg, Ellemers, & DeVries 1997). This does not mean that a person will physically become someone else: male instead of female or young instead of old. However, it does mean that certain characteristics (such as being female or older) might become more or less important depending on the context (David & Turner 1996). As Turkle (2000) has pointed out, having different identities is more common when the internet is part of a person's everyday life. Applied to the debate about exclusion these approaches argue that agency and social context are both determinants of exclusion. Durieux (2003) says that "[identity is] the outcome of a negotiation between self-reflexivity and social norms" (p.24). In other words, identity is the result of an interaction between the micro and the macro.

Although different aspects of the self change in importance they remain related to the different social groups to which a person belongs.[9] In this aspect self-categorisation theory differs from constructivist perspectives that support the idea that an identity can be freely constructed throughout life (Yi & Shorter-Gooden 1993). Self-categorisation theory assumes that different identities exist for different groups and that a person 'flips' between them according to the context and his or her personal history. A person can be a high or a low identifier within each of these categories.[10] Self-categorisation theory does not only discuss the ways in which a person will see

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[9] Smith and Leach (2004) point out that these groups do not need to be the general overarching categories of demographic groups. These might just as well be other groups such as families, neighbourhoods etc.

[10] Expression of categorisation with a group is often measured through asking the person if he or she belongs to a group, by pointing out to the person that he or she is a member of that group, or by the person's appreciation of the level of identification with a group.

him or herself as a member of a certain group but also to what extent the person feels that this identity is important and in need of protection. When there are less clear boundaries between in-group identity and other groups' identities, or when there is a threat to the group identity, those who identify strongly with this group tend to be more willing to defend it or make others aware of it. Those who are low identifiers tend to be more willing to accept super ordinate identity categories and are more likely to focus on an alternative group identity (Jetten, Spears, & Manstead 2001). One will also feel more like a member of a group when an explicit reference has been made to the person as a member of that group and when possible differences have been pointed out between that person's group and other groups (Jetten et al. 2001).

Information processing theory hypothesises about what people will do with mediated information as a result of self-categorisation. This theory argues that, after having established which group one belongs to and how important this identity is, individuals are influenced by those who are similar to them, by in-group members (Platow, Mills, & Morrison 2000). Self-categorisation with the source category is the basis for further interaction with the source (Eagly & Chaiken 1993). Applied to the internet this means that high identifiers will seek internet content related to their group from sources similar to them, and low identifiers would attach less importance to their group identity and use more general sites. Turner (1994) further emphasises that a person not only needs to attach importance to and be aware of a category in which he or she could fit, but must also accept this categorisation as applicable to him or herself in that situation and act upon it (see also Ellemers et al. 1999).

Summarising the implications of SIT and self-categorisation theories on internet use, the prediction would be that those people who see themselves as part of a socially excluded group, and identify highly with a group, will be attracted to websites that come from individuals or organisations of that same group and address them as members, than by websites that are impersonal or set up by outsiders. Those who categorise themselves as part of a high status group or identify weakly with a group will be less influenced by any references to group identity. For people to be attracted to 'identity specific' websites they have to be in a context that has previously activated their self-categorisation as a member of a specific exclusion group before they will surf to these sites (Appiah 2003). This group oriented behaviour will be

especially strong when interactions through the medium occur more frequently and group norms are considered relevant to any action that needs to be taken.

This thesis will use this framework to explain how context, social identity, group norms and individual identity interact in determining a broad variety of internet uses by members of vulnerable groups.

If in a certain context this social identity is deemed applicable, the valence of the group identity (i.e. group self-esteem) becomes important. As will be shown in paragraph 2.3.6, self-categorisation with an excluded group can have negative effects on the image of the medium and on the self as user if the group identity implies a negative evaluation of the medium and its use.

2.3.6 Feminist theories of exclusion: Stereotyping

Feminist scholars have shown how certain characteristics of in-groups are sometimes seen as an inherent part of one's personal identity. This form of self-stereotyping can be a consequence of self-categorisation as a member of a socially excluded group and can take a negative form if the evaluation of the group is negative (Johnson, Schaller, & Mullen 2000; Smith 1991). For example, a negative attitude towards their own group's mathematical abilities can subsequently lead to bad performances in tests even when the person has previously proven to have high aptitude (Hackett & Betz 1989). A negative evaluation of personal skills is especially strong when based on stereotypes[11] learned at an age when group awareness is minimal during what developmental psychologists would call the diffused stage (Johnson et al. 2000).

Wajcman (2000, 2004) describes how the active rejection of technology is seen by some as a fundamental part of being a woman (see also section 1.3). When a woman states that she is 'not technical' she affirms her female identity. This process is comparable to the concept of self-stereotyping used in social-psychological research (Johnson et al. 2000; Lorenzi-Cioldi 1991). It is therefore not just stereotyping by others that makes women use the internet less, it is also part of the active construction of a female identity. While this idea is very similar to self-categorisation the approach

[11] Stereotypes in this framework are very similar to group norms as used in SIT and self-categorisation frameworks.

is less agentic in Feminist studies. The process of stereotyping in Feminist studies can take place subconsciously as part of identity building while in self-categorisation theory it is awareness of group membership that gives power to group norms or stereotypes.

Stereotyping in relation to the internet has been found to go beyond quantity of use or skills. There are studies that suggest that the main differences between men and women can be found in the perception of the function of the medium itself; women use the internet, and especially email, more as a communicative tool and men more as an informative tool (Boneva, Kraut & Frohlich 2001; Cummings & Kraut 2002; Jackson, Ervin, Gardner & Schmitt 2001; Pew 2000; Whitely 1997). This could be related to the stereotype that women are 'supposed to be' social and communicative and men practical and factual. If, as is argued by Jackson et al. (2001), women view the internet as a communicative tool, internet self-efficacy and evaluation might improve if it is framed as a communication medium instead of an information, gaming or male medium.

However, a study by Rommes (2002) showed that the 'femininisation' of the internet might be more complicated than just changing the framing of the internet. She argues that it is difficult to create a female space on the internet because of the internet's structure and design. Gender studies often point out that in practice the internet is a highly masculine medium (Rommes 2002; Scott, Semmens & Willoughby 2001). Many Feminist researchers argue that the internet has a male dominated history, apparent in its military origin and in its dominant content such as male-oriented pornography and violent gaming (Pohl 1997; Reinen & Plomp 1997). Women are also seen as 'information poor' due to a more general level of socio-economic exclusion that disallows them access to these male dominated technologies (Torenli 2006). In other words, the internet is a medium made by the dominant (white middle class male) for the dominant. According to this perspective what is hidden behind women's evaluation of themselves as not interested in or not good at using the internet, is that there is an inequality in the provision of content for this group.

In the framework of this thesis it is hypothesised that a disinterest in using the internet might hide the idea that one is unable to work with the internet in the way one wants

to or 'should' (Gill & Grint 1995). The concept of self-efficacy has come up before in the digital divide debate and recurs again when looking at Feminist perspectives on identity and media use. Section 2.3.7 will discuss the development of this concept in relation to internet use.

2.3.7 Self-efficacy

Self-categorisation theory supposes that one always categorises oneself as a member of a group and Feminist approaches often argue that one attributes to the self the stereotypical characteristics that are seen as inherent to members of this group. Now that the internet and ICTs in general have become more ubiquitous one can expect this process to apply to stereotypes about the use of these media.

Certain skills are required for the handling of ICTs and the internet. Excluded groups are thought to lack these skills because they lack training and direct hands-on experience with these media. Following the self-categorisation argument and applying Feminist ideas of self-stereotyping, one can argue that a person who self-categorises as a member of such a group might subconsciously adopt this label of lower skill levels in relation to the internet. These stereotypes can therefore be said to become self-fulfilling prophecies. The literature on computer anxiety and self-efficacy sheds a light on how individuals belonging to certain groups have an idea of which computer skills can be attributed to members of their group and subsequently to themselves.

The terms computer anxiety, self-efficacy and attitudes have all been used to describe the evaluation of one's ability to work with computers and the internet (Durndell & Haag 2002; Harris 1999; Yang & Lester 2003). Internet anxiety could be seen as the apprehensions one has regarding use of the internet on a general level, relating not only to personal use but also to use by others and the effect the internet has on society. Internet self-efficacy was described by Eastin and LaRose (2000) as

> "...the belief that one can successfully perform a distinct set of behaviours required to establish, maintain and utilize effectively the internet over and above basic computer skills" (p.2).

In general, those people with higher self-efficacy and low anxiety scores have a greater chance of completing a task successfully than those who have opposite scores for self-efficacy and anxiety (Bandura 1996, 2003; Torkzadeh & Van Dyke 2002).

Besides influencing success in using the internet, self-efficacy levels might also influence the motivation to go and use it. Those with low levels of self-efficacy are, or say they are, less likely to use the internet in the future (Eastin & LaRose 2000).

If these differences in interests and perceptions are related to social identity and stereotypes, they might make it difficult for certain groups of users to receive the full benefits of internet use in specific use contexts even though they have full access and skills (e-Envoy 2004). For example, Selwyn (2004b) suggested that a lack of interest can hide not only a lack of confidence in one's own skills to work with the internet but also a feeling that the internet is not directed at one's group. Haddon (2000) uses the term self-exclusion to describe these processes of ICT rejection. As pointed out in the previous section, Feminist approaches refer to the same principles in saying that stereotyping makes women or other excluded groups think that a technology is not made for them or that it is not appropriate for them to use it or be good at using it (Gill & Grint 1995).

All this indicates that members of some groups in society might be disadvantaged not because they do not have access or skills, but because they *feel* they do not have the skills to go online or because they imagine the internet to be of little use (Anderson 2005; Cushman & Klecun 2006; Dutton & Shepherd 2006; Selwyn 2003, 2004a-b). These feelings might be unjustified and come from social preconceptions about what it is that certain groups are supposed to be good at doing.

Summarising the meaning of all of the above for this thesis, factors like stereotypes related to internet self-efficacy or anxiety could play an important role in stimulating or deterring further internet use (Eastin and LaRose 2000). The incorporation of SIT supports the argument that these perceptions of the self can differ according to the social context and status, and it is therefore important to study their influence on use.

The following section discusses theories that have studied the use of media in general (uses and gratifications) and the internet in particular (computer mediated communication and information-processing models) without explicitly incorporating ideas of social identity or stereotyping. These theories go into more detail regarding the processes that lead to certain uses of the internet at an individual or micro-level.

2.4 The image and use of the internet: Micro perspectives

After discussing the macro aspects of digital exclusion through the digital divide debate on a national level, and subsequently on a meso-level in its relationship to social identity and stereotyping, this section discusses how one can look at media use on an individual or micro-level.

The question posed in this section is:
Q2.6 *How has internet use been explained from a micro or agentic perspective?*

Research has shown that the perception of the internet and what to expect from it has changed over time. While for most people the internet at first was nothing more than a big database, users are now beginning to see it as a multimedia instrument. The distinctions between different traditional media seem to blur (Flanagin & Metzer 2001; Slevin 2000). There is no consensus about whether people develop a certain pattern of use of the internet in accordance with how they used traditional media, or whether there is something fundamentally different in the way they use and perceive the internet (Dutton & DiGenarro 2005; Anderson & Tracey 2001). In general, technologies like the computer have been integrated into patterns of daily life fairly easily without disrupting existing structures and habits, which would be evidence in favour of the first argument (Silverstone & Haddon 1996; Anderson & Tracey 2001; Anderson et al. 2000). In discussing micro frameworks, this thesis follows the tradition of authors such as Bakardjieva (2001) and Silverstone (2000) in considering that what happens on the internet is an extension of what happens in everyday life (see also Wellman & Gulia 1999; Livingstone 2002; Anderson 2005a). As people belong simultaneously to different realities in everyday life people can adapt and use ICTs according to these different realities.

2.4.1 Uses and gratifications

The uses and gratifications (U&G) framework has studied how interests influence the way a person uses media and has recently been applied to internet research. Research using this perspective studies internet use based on the idea that this is the result of conscious choices made by individual media users and these processes do not change

significantly over time. This has led to the construction of different internet user profiles.

The internet offers a far wider range of choice for the user in terms of content, design and meaning than other media. An enormous quantity of information and a broad array of contents are available, and the user has to make active choices regarding what to access and when and where to do so. For traditional media, content was predetermined, offered at a certain time, and mostly restricted to private locations; the internet on the other hand reaches out to schools, the workplace and the home and can offer different types of content and services at the time the user desires them (Flanagin & Metzger 2001; Haddon 1999). Even though schools, parents and providers block certain sites the internet still has this image of a place of unlimited opportunities.

The internet itself is a concept with unclear boundaries and many scholars have used the term in different ways. Sometimes the internet is defined narrowly so as to include only websites. At other times it is described as including email, chat, newsgroups, websites and MUDs.[12] Anderson and Tracey (2001) have argued that the internet cannot be studied as a single unit and view it as a "delivery mechanism for a range of services that are continually evolving and are used differently by different people" (p. 462). The internet is changing fast and new applications are invented every day. Web 2.0 applications, which serve as platforms for interactive multi-media file sharing and social networking sites, are the latest development (O'Reilly 2006). These applications were not yet popular when the research for this thesis started. In this thesis therefore a relatively old fashioned definition of the internet was used which envelops static websites, chatting and browsing.

Even when one uses a narrow definition of the internet as meaning just websites, there are many different types of websites and it would be illogical to argue that all these different types of sites are given the same use. U&G theory developed in detail by Blumler and Katz in the early 1970s is a framework that explains how different

[12] December (1996) gave a technical definition of internet use: "internet-based, computer-mediated-communication involves information exchange that takes place on the global, cooperative collection of networks using the TCP/IP protocol suite and the client-server model for data communication" (p26).

expectations of different media can lead to different types of uses given to these media (Rosengren, Palmgren & Wenner 1985). The extent to which these media then comply with those expectations or needs gives the media user higher or lower gratifications (Kippax & Murray 1980; Palmgreen 1984; Palmgreen & Rayburn 1982, 1983, 1985). Given that the internet has a wider range of different functions than traditional media, such as television and radio, the internet might offer a new range of uses to individuals (e.g. Didi & LaRose 2006; Slevin 2000).

The U&G framework sees the individual as an active and conscious user of different media that are used to gratify personal needs (Dimmick, Kline, & Stafford 2000; Flanagin & Metzger 2001; Korgaonkar & Wolin 1999; Perse & Rubin 1990). U&G theories have a functionalist approach to the use of media, that is people use media according to their personal needs. As a consequence the framework has a relatively narrow focus on how needs lead to uses which in turn result in gratifications; positive gratifications then lead to more use and negative gratifications to less use.

In general, this has driven uses and gratification research to study the uses given to the internet and not the cognitive and emotional processes that create the needs. These needs are then linked to socio-demographic groups without further exploration of the causes of these links (e.g. Chang, Lee & Kim 2006). Examples of this are studies showing that women have communication needs and tend to use the internet as a communicative medium and men have information needs and use it as an informative medium (NTIA 2000; Pew Research Center 2002). Another more typical U&G example would be Korgaonkar & Wolin's (1999) study in which they clustered individuals based on their media uses and gave them classifications such as: the information person, the entertainment person or the communication person. In line with U&G theories, Chambat (1994) argues that the individual has personal strategies that determine how a new technology will be constructed and subsequently used. None of these studies investigates what leads to a person having these personal characteristics.

There is research which used U&G tools that has theorised how needs might change. King and Xia (1997) studied how an individual's media choice in a work situation changes when learning experiences vary. Their study indicated that varying personal

circumstances affect which media a person uses. In the context of traditional media, ethnic minority groups have been found to use media both as an integration tool and as a means of cultural segregation with varying degrees of gratification of this need (Jeffres 2000; Subervivelez 1986). Linking macro to micro factors, others found that users from different socio-demographic groups make different uses of the internet because they seek different gratifications (Cho, Gil de Zúñiga, Rojas & Shah 2003). Research by Papacharissi and Rubin (2000) used the U&G framework and other micro psychological models to explain internet use. They found that those who evaluated their social circumstances more positively (i.e. more confident persons) used the internet in a task oriented, information seeking way, while those who were less socially secure used the internet as an interpersonal communication or entertainment tool (see also LaRose, Mastro and Eastin 2001). This is complemented by the findings of Kraut et al. (1998, 2002) which showed that psychological wellbeing influences internet use. The emphasis on users' individual characteristics has caused the effects of social identity and context to play a subordinate role in most U&G research. Similarly, Heim, Brandtzaeg, Hertzberg, Endestad and Torgeson (2007) linked self-efficacy and confidence levels in relation to scholastic and athletic competence to media use, where those who were typically more confident on a wide variety of measures made a more utilitarian use of the Internet, while those with low confidence focussed on entertainment uses of different media.

A critique of this agentic U&G approach to media use was given by Chung and Nam (2007), who tested the Technology Acceptance Model (TAM) for Instant Messaging. They found that self-efficacy was related to attitudes and intentions of use but not to actual behaviour. They argued that social (peer) group norms are more important than individual attitudes and intentions in determining use of communication media for young people.

While not dealing directly with social identity issues such as stereotyping or group characteristics, computer-mediated communication (CMC) models did incorporate social context into their framework. The next section discusses how the awareness of others can influence computer users' interaction with these others.

2.4.2 Computer Mediated Communication (CMC) Models

Communication through and with computers has been studied for two decades (Ibarra & Balimberti 2006; Lamerichs & Te Molder 2003; Lee 2004, 2006; Postmes, Spears & Lea 1999; Thurlow, Lengel, & Tomic 2004; Walther, Anderson & Park 1994). Interest in this field initially led to investigations on the effects of the use of computers in interpersonal communication, but has now spread to incorporate any kind of interaction of humans with and through computers. The approach taken to CMC in this thesis is based on the studies which come from the original CMC frameworks that examine the influence of anonymous computer environments on the ways in which individuals relate to (unfamiliar) others and how this might be different from Face to Face (FtF) interactions. The main debate within this framework is whether computer anonymity deteriorates or enhances patterns of communication (Hancock & Dunham 2001; Ibarra & Galimberti 2006; Peters 2006; Roberts, Lowry & Sweeney 2006; Walther 1994, 1996).

The *cues-filtered-out* approach used in CMC studies hypothesises that when people interact through a medium in which fewer visual and audio cues are available less attention is paid to social norms (Hancock & Dunham 2001; Peters 2006; Lowry et al. 2006; Walther 1996). A positive interpretation of this phenomenon is known as the *equalisation* effect; a reduction in social cues encourages more equal participation in CMC than in FtF communication (Dubrovsky et al. 1991).

Since computer mediated interaction is (or was) in general text based, communication through computers reduced the number of context cues present in an interaction. In other words, CMC offered anonymity in interactions where the participants knew little about the other communicators (Sproull & Kiesler 1986; Culnan & Markus 1987). The cues-filtered-out model predicts that CMC will be impersonal and less intimate but more equal since FtF status characteristics are absent (Rice & Love 1987; Culnan & Markus 1987).

Siegel and Dubrovsky (1986) confirmed these hypotheses and found that people who communicated through computers with others, in comparison to those who communicated FtF, made fewer remarks, took longer to make decisions, participated

more equally, and used more inflammatory remarks. Decisions made by these CMC groups was further away from the personal choice as indicated by the person before he or she was introduced to the opinions of group members. This was later confirmed in an experiment by Kiesler and Sproul (1992) in which participants in CMC showed more readiness to adapt to the position of the group.

The cues-filtered-out approach seems to function well in contexts where communication is short term and between participants that have no further interest in interacting with others. For long term interaction through computers or for interaction in which more is at stake, it fails to explain the persistence of status differences in interaction (Weisband, Schneider & Conolly 1995).

In some instances research has shown that CMC can intensify interpersonal relationships between people (Walther 1996; Bargh et al. 2002). CMC is argued to lead to a more conscious construction of the self and the possibility of idealising the other (see Lee 2005). This makes CMC more personal and more intense than any FtF communication would be (Walther 1992; Walther & Burgoon 1992). Cues-filtered-out approaches all assume that CMC is more extreme and more equal than FtF interactions, although authors differ on the result of this which can be either negative (i.e. flaming and bullying) or positive (more intensely personal) .

2.4.3 Social information processing theories

The *social information processing* theory based research accepts that CMC offers fewer cues and is therefore slower in establishing patterns of interaction. However, this approach assumes that, with the prospect of future interaction, participants will put an effort into filling the gaps of information regarding others (Hancock & Dunham 2001). This is where social identity becomes important, because these gaps are filled by attempts of the communicators to discover which social groups the person belongs to. Although social information processing theory does not detail which characteristics belong to which groups, or how strength of identification influences social identity formation or behaviour, it does argue that the general perceptions about different social groups are used to fill the voids created by the lack of cues on the internet. According to this framework, short term interaction with computers leads to less personal and task oriented behaviour, while the prospect of

future interactions through the medium make status equalisation effects of CMC weaker and adherence to offline group norms stronger. It makes it, in other words, more likely that people will behave online as they do offline (Hollingshead 1996; Walther 1992, 1996).

Revising briefly what these micro theories say about the individual factors that influence internet use this thesis argues that personal characteristics influence needs and expectations regarding the functions of a medium which in turn influence what the person will do with the medium. These expectations are influenced by the social context (i.e. anonymity) and the time context (i.e. the possibility of future interaction). The extent to which these expectations are met by possible uses determined how a medium is evaluated.

2.5 Summary and conclusions

One of the aims of this thesis is to develop a theoretical model that integrates the effects of macro (social structures) and micro (individual decision making) elements in relation to internet use by vulnerable groups. This chapter reviewed six theoretical frameworks that can be adapted to achieve this aim. It started with a review of the literature regarding macro-level approaches and discussed the digital divide framework as the most frequently applied model. It then went on to discuss meso-level approaches such as Social Identity Theory (SIT) and Feminist stereotyping theories that relate social identities to behaviours and attitudes. Finally, it investigated two main theories of media use from a micro perspective and related media use to confidence and context by applying Uses and Gratifications (U&G) and Computer Mediated Communication (CMC) models. All these theories have something to offer in explaining internet use by marginal groups but none of them completely explains the interaction between the micro and the macro in determining internet uptake, evaluation and use.

The question posed at the beginning of this chapter was whether structural factors of exclusion at a macro-level can be influenced by processes taking place at a micro- or meso-level. Based on the theory presented it is argued that meso- and micro-level factors have been shown to influence internet use independently of what takes place at

a macro-level, and that the lack of theory that incorporates macro-, micro- and meso-level factors hinders an understanding of the processes underlying internet use. Thus to answer Q2.1 the macro approach to understanding internet use needs to be complemented with meso-level social identity theories and micro-level agentic approaches to internet use.

The answer given to the second question about the influences of macro theoretical approaches on policy making, and ideas about internet use by socially excluded groups, is that the application of macro economic or sociological models has led to digital inclusion strategies that focus on technological infrastructure because the main problem of inequality according to these models is a lack of resources. This has led to policy that is unable to address differences in use for different groups when access is wide spread. In this chapter it was argued that these digital divide frameworks are partly flawed because they do not address the influence of social and individual factors on internet use. They assume that social exclusion has the same effects on internet use in different situations and that the effect of this exclusion is similar across groups whose social identity development is different.

This thesis argues that a more flexible concept of exclusion and identity needs to be applied on the understanding that those who can be considered disadvantaged socially (i.e. women, ethnic minorities, the disabled and sexual minorities) can sometimes have a high status online (e.g. Asian ethnic and LGB groups). The answer to Q2.3 (p.47) is that a definition of social exclusion to be applied to digital exclusion should incorporate both social and internet status which, because social environments in which people use the internet change, can differ from one moment to the next.

Following from this, two key concepts for this thesis are social identity and social context. In this thesis social identity is defined as the awareness, importance and evaluation of the different groups one belongs to at a certain point in time and space. Social contexts are the implied or real others that are present in the mind of the individual. Thus social context can be an environment, in which the individual is of higher or lower status in comparison to perceived others or an environment in which nothing is known about the others or about the person (i.e. anonymity). It was argued that social identity theory (SIT) addresses the interaction between social identity and

behaviour and implicitly incorporates the influence of context on behaviour. SIT explains how in different contexts different aspects of one's identity can be important and how sometimes individuals feel part of one group and sometimes part of another. In answer to Q2.4 it is argued that social-psychological frameworks define exclusion as multilayered and dependent on social context and that this definition is therefore useful in this thesis which investigates the aspects and effects of digital exclusion.

Social Identification and Deindividuation (SIDE) theories, derived from SIT, claim that a condition under which group identity becomes important is anonymity for which computers are the perfect environment. While SIT theories do discuss how marginal identity is influenced by context and thus continue where macro frameworks stop, they do not often link it to differences in media use. They do see computers as anonymous contexts that let different parts of the identity come forth but they do not study how identity awareness can cause differences in internet use.

Feminist stereotyping theories have explored how social group identity and ICT use are linked but do not specify how different contexts make different (aspects of) identities important. Feminist researchers argue that social stereotypes about ICT use by different groups are internalised by the person and that this can lead to a negative or positive disposition towards the medium. The answer to Q2.5 (p.54) based on SIT and Feminist stereotyping theories is that people's perceptions of themselves and their behaviour can change because of a change in their social context (i.e. different forms of anonymity) or because of stereotypes that exist about the group with which they identity at that moment.

Neither SIT nor stereotyping theories look at how individuals use media in different ways since they always investigate use from a meso/macro-level, either studying the broad influences of group status on identity or the direct influence of stereotyping on media behaviour and attitudes. By doing this they ignore research which shows that group membership does not have singular effects for all people and that instead its effects differ between individuals.

Towards the end of this chapter individual level theories such as uses and gratifications (U&G) and computer mediated communication (CMC) theories were

discussed. U&G theories describe the different types of media use that exist and how these correspond to an individual's needs. In answer to Q2.6 (p.66) which asked what influences a person's internet and media use, U&G theories would answer personal characteristics and expectations of the medium.

CMC theories address how people behave differently in computer mediated and face-to-face environments and show contradicting findings; some argue that people will behave more sociably while others argue that they will be more antisocial. These theories study processes of decision making at an individual level and therefore inhibit thinking about the influence that resources, stereotypes and identification might have on this use. A further problem with CMC theories is that they focus on direct interaction with others through computers. Their answer to Q2.6 would be that the prospect of short interactions in anonymous environments makes social exclusion less important while long term identifiable interactions make computer use as vulnerable to social exclusion as real world interactions.

This thesis argues that social identity and stereotyping play a role in decision making processes about where to go and what to do online even when there is no real person to interact with on the internet and despite the fact that they have a different role for different groups and individuals. Meso-level models are argued to offer a link between micro- and macro-level theories, between social structures and individual behaviour (see also McKenna & Bargh 2000).

2.6 Theory and the further development of this thesis

A question that remains unanswered as regards the internet is how macro theories about resources and micro theories regarding expectations can be linked to meso theories about social identity and stereotyping. This thesis will complement previous studies through the integration of macro, micro and meso frameworks in the next chapter.

Using this approach shifts the emphasis in exclusion-inclusion debates away from the socio-deterministic view that tends to see individuals as caught up in a web of demographic and social restrictions that determine this person's behaviour without the

individual's characteristics having much influence. It focuses on the influence of agency on internet use within this web of restrictions. This combination of theories also allows for a distinction between different levels and experiences of exclusion and for an applied discussion of Tolstoy's idea that inclusion (or happiness) is a homogenous state.

It is important to stress the point that in this thesis the choices the individual makes are seen to constantly interact with social and economic circumstances. This interaction is said to take place at the meso or social identity level. A conclusion based on the literature reviewed in this chapter is that meso models could be the piece of the puzzle that links macro with micro frameworks through the incorporation of stereotypes and social identity. These social-psychological models explain how socio-demographics are related to images of groups and how group images influence the expectations and behaviours of individuals. Group identity and stereotypes are thus mediators between socio-demographic and individual effects on behaviour. In Chapter 3 these frameworks are brought together in a comprehensive model, in which meso-level factors are assumed to mediate the effects of macro- and micro-level variables in different ways depending on the group identity that is activated.

This thesis does not attempt to determine how important digital inclusion or exclusion is for policy making. It is in this sense not a policy paper. However, it will offer a more comprehensive picture of all the aspects that are involved in internet use and socially excluded groups. The theoretical aim of this thesis is to bring together the different theories presented in this chapter to illuminate the multidimensional problematic of digital inclusion. This means that the primary focus is not the further development of these individual theories, but that the combination and application of these theories might lead to insights (for example about anonymity) that are useful to others who do have this intention. Hopefully the insights gained will stimulate further policy and academic debates regarding priorities in internet research and politics.

In Chapter 3 the theories discussed in this chapter will be combined into a theoretical model. In that same chapter different hypotheses based on this model about the relationships between macro-, micro- and meso-levels will be addressed in detail.

3 Research models, hypotheses and general methodology

The previous chapters have discussed different approaches to the study of internet use by individuals from vulnerable groups. These theories address a variety of elements in the digital exclusion debate and emphasise different factors in their explanation of the processes behind inclusion. Only a few incorporated what is known from micro-level studies into theories that build on macro-level findings, and even fewer digital exclusion studies incorporated meso-level social-psychological theories. Up until now these theoretical frameworks have not been compared in terms of their explanatory power because the scholars who use them come from different disciplines and seem to work in isolation. Nor has the effort been made to address them in a coherent framework. Another reason for the lack of integration of different approaches is that the range of analytical techniques that have been applied in single studies is narrow and does not allow for the incorporation of both elements.

This chapter will first show graphically which models underlie these separate frameworks and discuss the hypotheses related to them. This is done to visualise the differences in emphasis between the theories and subsequently to combine these separate models into a comprehensive hypothetical model. This combined model shows in which areas the existing theory is lacking and which hypotheses can be drawn in relation to these missing links. The second section of the chapter will address why a triangulation of methods is considered valuable to test the previously presented hypotheses. The chapter concludes with the description of the measures used in this thesis to test the models and links these to the theories discussed in previous chapters.

3.1 Building blocks of the main theoretical frameworks

In Chapters 1 and 2 six approaches to studying internet use by social groups were discussed in detail: the digital divide approach, Feminist stereotyping theory, social identity theory and self-categorisation frameworks, computer mediated communication models and the uses and gratifications approach. In this section these theories are reduced to their core arguments, graphically depicted and discussed in terms of the factors they study and the hypotheses that underlie them. This serves the

purpose of elucidating how each contributes to the explanation of digital inclusion rather than to develop these six areas of theory separately.

The question to be addressed in this section is: Q3.1 *Which hypotheses can be deduced from individual macro, meso and micro frameworks?*

3.1.1 Traditional approach to digital exclusion: The digital divide framework

The digital divide framework supposes that certain socio-demographic indicators influence the access people have to resources and that because of this process they will have fewer opportunities to access and use the internet (see section 2.2). This is a macro approach because it assumes that general societal factors determine how people act at an individual level. The most effective way of addressing differences in internet use according to this approach is decreasing educational and economic inequalities or more practically, provide those who do not have the resources with free access to and training in computer and internet skills.

The hypotheses related to this framework are

H1a: Individuals from socially excluded groups have fewer educational and economic resources.

H1b1: Individuals with fewer educational and economic resources have lower levels of access to the internet and lower skill levels in using the internet.

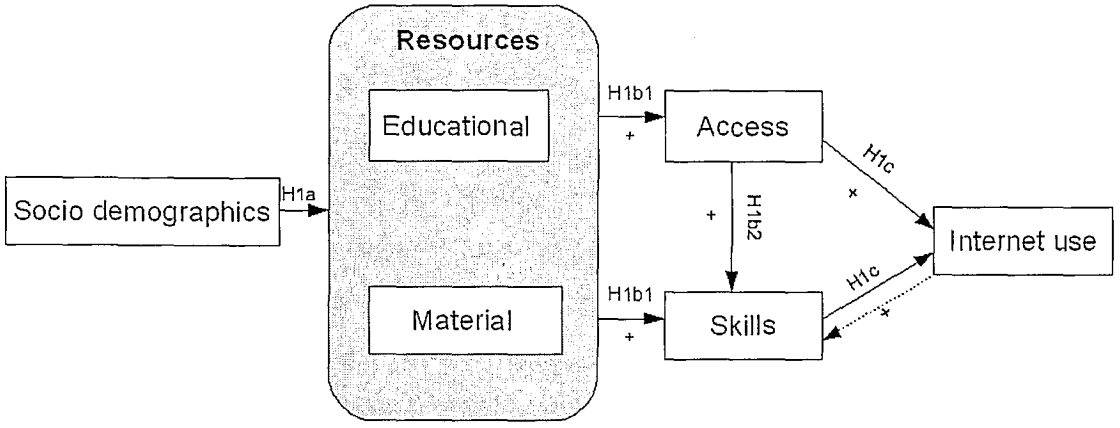
H1b2: Individuals with a lower quality of access to the internet have lower skill levels.

H1c: Individuals with lower skill and access levels use the internet in a less extensive manner.

H1d: The relationship between social exclusion and internet use is mediated by resources, access and skills as stipulated in Figure 3.1.

Graphically this can be depicted as in Figure 3.1.

Figure 3.1 Graphical depiction of digital divide framework



Note. H1d relates to mediated relationships and is therefore not linked with any one path in the model

The arrows in Figure 3.1 signify a direct relationship between the factors that are connected to it. For example, socio-demographics are understood to be directly related to the availability of economic and educational resources. All the arrows in this model are unidirectional, but one could argue that there is a feedback loop between internet use with skills which would cause a digital divide to grow bigger. This relationship is depicted with a dotted line.

Studies based on this framework typically use large scale household based surveys to test these hypotheses. An example of such studies in the UK is the annual Office of National Statistics report on internet use. This report uses the national Omnibus surveys which measure the level of access and time people spend online while at the same time measuring income and educational levels. Another example is a series of studies done by Foley et al. (2003) for the Mayor of London which examined in more detail vulnerable groups, what they do on the internet and their level of skill.

3.1.2 Traditional approach to social exclusion: Stereotyping

Most Feminist approaches to social exclusion or discrimination assume that being part of a certain social group causes people to behave in ways that correspond to the stereotypes that exist in society about that group. A hypothesis for women in this case would be that women feel uncomfortable with or do not like technology because they have internalised stereotypes that exist about women and technology, that is that

women are less good at using and do not like technology. The process of internalisation of these general stereotypes often occurs without the person being consciously aware of doing this and influences all aspects of this person's life.

One of the aspects studied by Feminist scholars is the use of the internet and the attitudes members of these groups have towards this medium. While Feminist scholars also argue that inequalities exist on the basis of socio-demographics in the same way that the digital divide hypothesis does (i.e. women have fewer educational and economical resources -H1a- and therefore fewer skills and less access –H1b-), they stress in addition that there are meso-level perceptions and stereotypes about disadvantaged groups that prevent an equal uptake of technological opportunities and that sometimes these stereotypes can be more important in determining what one does on the internet than actual factual differences in resources.

These ideas can be expressed in the following hypotheses:

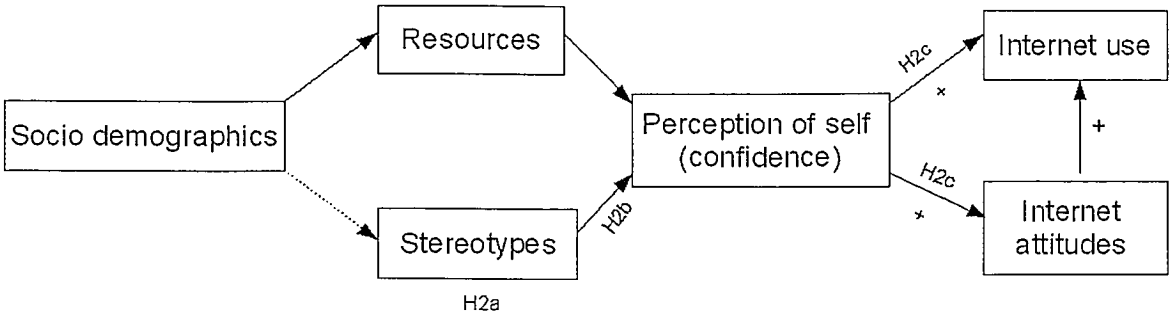
H2a: Stereotypes exist about all social groups in relation to their behaviour and attitudes.

H2b: Stereotypes about social groups are internalised by members of these groups and mirrored in the opinions of these individuals about their own aptitudes and in their opinions about other objects and persons of other groups.

H2c: Positive stereotypes about a medium at a group level lead to positive appreciations of one's own media use and subsequently to a broader use of the medium and a higher appreciation of it.

Graphically this can be depicted as in Figure 3.2

Figure 3.2 Graphical depiction of Feminist approach to behaviour



Note. Since group stereotypes are assumed to be universal the link between socio-demographics and stereotypes is not a causal one. In this case it indicates that being a member of a different group will relate to different in-group stereotypes.

According to Feminist theorists, the solution to inequalities caused by differences in internet use is twofold; first basic inequalities in resources between groups have to be diminished and, second, negative stereotypes about a group's use should be changed into positive ones. Since they assume a causal sequence that involves group to individual level relationships (internalisation of stereotypes), stereotyping approaches can be located at the theoretical meso-level.

Most Feminist studies of the use of the internet by socially excluded groups use interview techniques and observation to demonstrate the existence of stereotypes and the way in which these are internalised. There is an active field within Feminist stereotyping literature that addresses the relationships between gender stereotypes and the use of and attitudes towards technology. Examples of studies based on interview and observational data that relate directly to the internet are those done by Wajcman (2000) in the UK and Rommes (2002) in the Netherlands (see section 2.3.6).

3.1.3 Importance of identification: Social Identity Theory

Social Identity Theory (SIT) is concerned with how identification with a social group can lead to certain behaviours and attitudes towards others. It does not explicitly address media related behaviour or attitudes but does have a clear view about the ways through which membership of a group influences behaviour and perceptions of the self and other. SIT specifies the conditions under which internalisation of group attributes, often labelled as group norms, might take place (see section 2.3.4). Under this paradigm either group or personal norms will influence behaviour and attitudes

towards others depending on cues in the environment about the identity of others and of the group.

The main hypotheses related to this theory are:

H3a1: Members of different groups have different levels of awareness of their group identity.

H3a2: These different levels of awareness are necessary for them to give importance to social identity and for this to have differentiating effects on self and group perceptions.

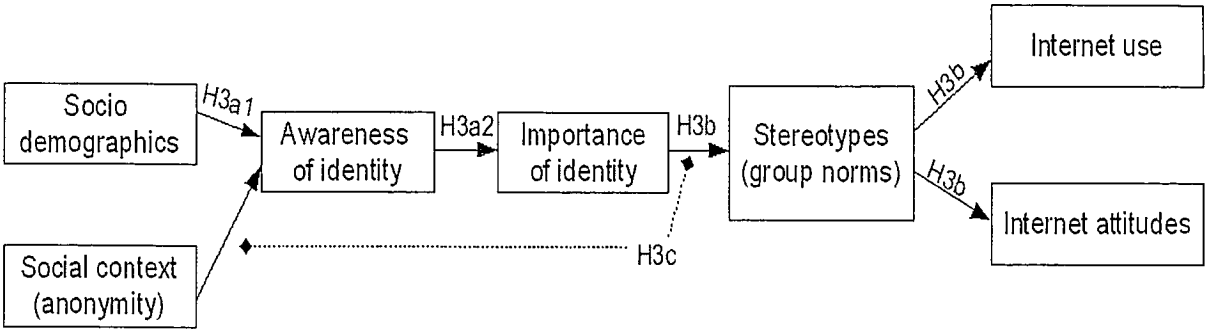
H3b: High importance of group membership and a strong identification with the group are necessary conditions for (internalised) group norms to influence an individual's behaviour and attitudes.

H3c: The effects in H3a and H3b are stronger under those conditions where both the individual group members and the person as an individual are anonymous but the group identity is known.

Although terminology used by the digital divide, Feminist, and SIT frameworks is slightly different, parallels can be drawn between these research models and for comparative purposes the same terms are used whenever possible. While for example Feminist scholars would talk about stereotypes and SIT theorists about group norms, they essentially mean behaviour and attitudes that are seen as appropriate for members of these groups. Feminist theory says that these are socially formed by societal interactions and systems, social identity theory says that group norms can be situation specific but also that they are based on stereotypes.

Graphically SIT can be depicted as in Figure 3.3

Figure 3.3 Graphical depiction of SIT approach to behaviour by group members



Note. Stereotypes in Figure 3.3 refers to the internalisation of group norms.

Not all the arrows in Figure 3.3 reflect simple linear causal relationships. Instead they are indicative of relationships between variables, not necessarily causal, and of the way they are supposed to be organised in time. For example, in this model the arrow between socio-demographics and awareness of group membership does not mean that socio-demographics cause identification, but that socio-demographics determine which groups you might identify with and, in an even more precise definition (see also hypotheses), that the relationship between socio-demographics and the importance or strength of group identification depends first on being aware of belonging to a certain group. Without this first step of identification the importance of a group and the extent to which one identifies with it are irrelevant or even impossible. Only under conditions of awareness and high importance will stereotypes and group norms influence behaviour.

Social identity theory does not specifically address internet use, it is directed towards more general behaviour and attitudes within and between groups. But the premise of this thesis is that SIT concepts can be applied to internet use because the internet is a social environment in which we behave according to certain personal or group norms depending on the context. In this case high group importance and a strong identification with the group are necessary conditions for stereotypes to have an effect on behaviour and attitudes. Typically these effects are tested through experiments, both Sassenberg and Postmes' (2002) study and Lee's (2004) study which manipulated awareness of personal and group identity through the presentation of pictures and cartoon characters are typical examples (see section 2.3.4).

3.1.4 Self-categorisation: Social identity in isolation

SIT focuses on the effect the presence of others has on the way individuals identify with and act in a group. The self-categorisation approach emphasises that different social contexts can generate different group memberships even when there are no objective indicators of the presence of others. This approach is less likely than SIT to assume that there is such a thing as personal norms, since all the groups people are part of are a part of personal identities and influence our behaviour no matter whether others are present or not. This makes it similar to Feminist stereotyping approaches were it not that self-categorisation theory has a more flexible approach to identity. Instead of assuming that group characteristics or stereotypes are (subconsciously) internalised, it assumes that the individual has agency in deciding which group membership is important and that indicators in the context are used to determine which group one (wants to) belongs to.

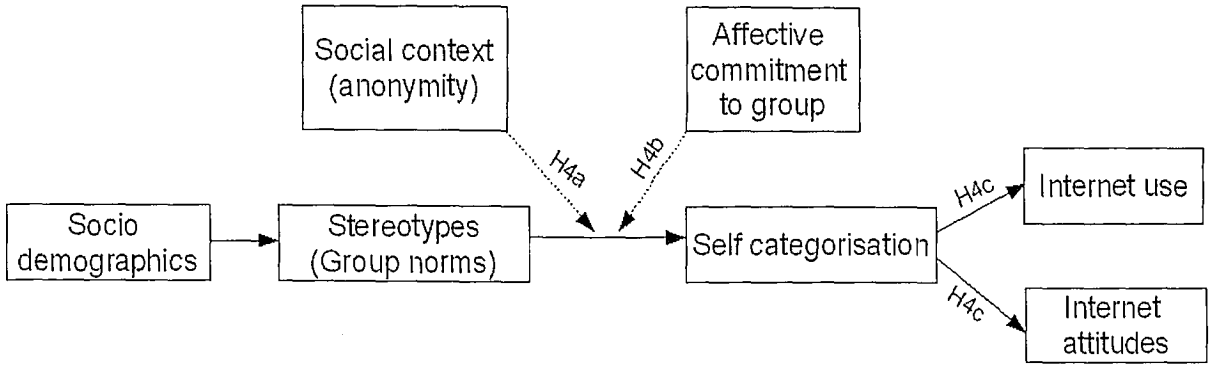
Self-categorisation as explained through SIDE approaches to SIT therefore theorises that the person consciously decides which group membership is relevant in different contexts which neither SIT nor Feminist theory do.

In hypotheses this can be described as follows:

> H4a: Group attributes (stereotypes) are internalised into the person's self-perception in social contexts that make this group identity important.
>
> H4b: Once a person has self-categorised as a member of a certain group and considers the group to be important to them personally (affective commitment) then these group attributes are internalised.
>
> H4c: Different self-categorisations based on group membership result in different behaviours and attitudes.

Graphically this is made clear in Figure 3.4.

Figure 3.4 Graphical depiction of the Self-Categorisation approach to behaviour by group members



In general experimental situations are used to manipulate the social context and thus change the category to which the person ascribes themselves (Jetten, Spears, & Manstead 2001). In this thesis the general self-categorisation theory outcome variables (i.e. behaviour and attitudes) are applied to the internet context. The causal sequence is assumed to lead from group membership (i.e. socio-demographics) via social context (i.e. anonymity) through self-categorisation to different types of internet use and attitudes. In other words, social context influences which of the available socio-demographic group memberships of the person is seen as the most relevant; this group membership is then activated (i.e. self-categorisation) and is used as a template for behaviour and attitudes.

3.1.5 Traditional micro frameworks: Uses and gratifications

Because the Uses and Gratifications (U&G) framework does not take macro-level factors, such as socio-demographics, or meso-level factors, such as stereotypes and self-categorisation, into consideration, its basic premise is fairly straightforward. It is based on the idea that individuals have certain needs that they are seeking to fulfil through media use. Individuals pick the medium and the type of use they want to give to this medium according to these needs and if they succeed (i.e. are gratified) they evaluate the medium positively and future use will be more likely. This is a micro approach to media use since it assumes that individual characteristics and agency are the most important causes of behaviour.

Based on these premises the hypotheses are:

H5a: Users with different perceptions of themselves seek different gratifications in media, that is they have different media needs.

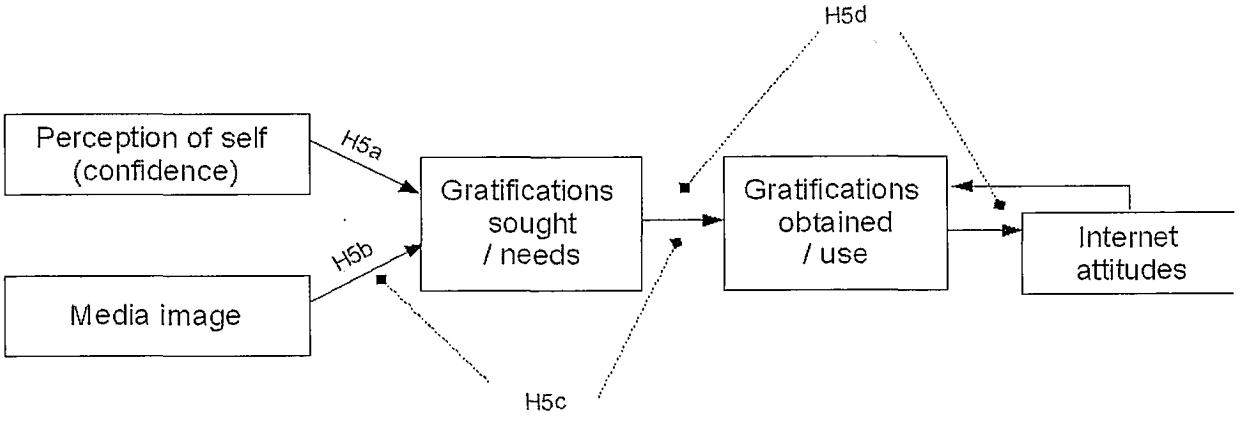
H5b Varying perceptions of what different media should be used for, that is its image, lead to different perceptions of what a certain medium is important for (needs).

H5c: When needs are in line with the image of the medium, that medium is used in a way that corresponds with these needs and images.

H5d: When the medium gives the user what they sought the evaluations of this medium are positive and the possibility of future use increases.

Graphically this is depicted by the model presented in Figure 3.5:

Figure 3.5 Graphical depiction of Uses and Gratifications theory



In general U&G frameworks use surveys and in particular factor analyses to determine which types of persons are related to which types of uses. There is a lack of clarity on how to measure types of users, since it is mostly done by measuring actual use instead of by asking how persons perceive themselves as users. While not explicitly the goal of U&G based research, it often links these types of media use and users to different social groups (i.e. women and ethnic groups). The assumption is that the differences between uses are explained by different personal characteristics (e.g. confident or insecure) and not by the social context or the group that the person belongs to. A typical example of a study that relates user types to needs, evaluations and use is Kargaonkar and Wolin's (1999) study. Paparachissi and Rubin's study

(2000) is an example of a study that investigated the uses of users with different self-perceptions (see section 2.4.1).

3.1.6 Micro approaches to SIT: Computer Mediated Communication

As described in section 2.4.2 computer mediated communication (CMC) theories do not incorporate stereotypes or attitudes within their general framework but they do apply the general concepts of SIT on a micro-level. CMC frameworks have focused especially on the effects of anonymity on online interaction. However, in contrast to SIT, they are less interested in traditional group membership which is the focus of the stereotype related theories (SIT and Feminist theory). The early CMC studies focused on the direct impacts of social contexts (anonymity and the status of others) and time contexts (continued or one off interactions) on online behaviour without addressing intervening variables such as identification and self-categorisation.

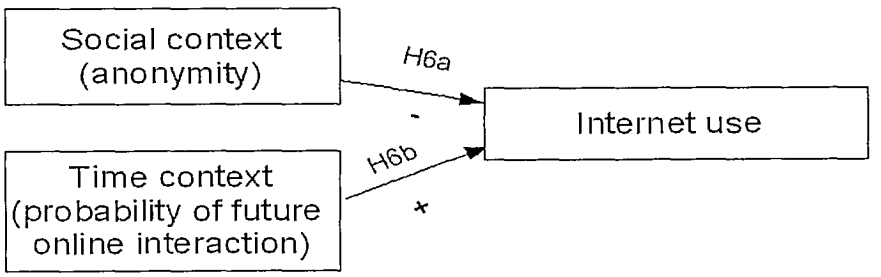
In terms of hypotheses they assume the following:

H6a: The higher the levels of anonymity, the lower the importance of behaving according to social norms and status.

H6b: The longer the interaction with others online, or the more likely it is that this interaction will continue in the future, the more important offline social norms and behaving according to status.

Figure 3.6 shows the model of CMC approaches to the processes behind Internet use.

Figure 3.6 Graphical depiction of CMC approaches to online behaviour



Note. Internet use in CMC should be interpreted as behaviour in compliance with group norms.

The latest work on CMC has shown that anonymity leads to behaviour that is not according to social norms when the interaction is short term, and that offline and online behaviour will be more similar when the probability of future interaction is

higher. The most frequently applied method in this framework is the experiment. Typical examples of CMC research are the studies by Lee (2004, 2006) and Hancock and Dunham (2001).

3.1.7 Combined hypothetical model

Sections 3.1.1 to 3.1.6 described the models and hypotheses related to the main theoretical frameworks presented in Chapters 1 and 2 in a highly simplified and schematic way. These simplified models serve as the basis for the model presented in Figure 3.7 which incorporates all these different frameworks.

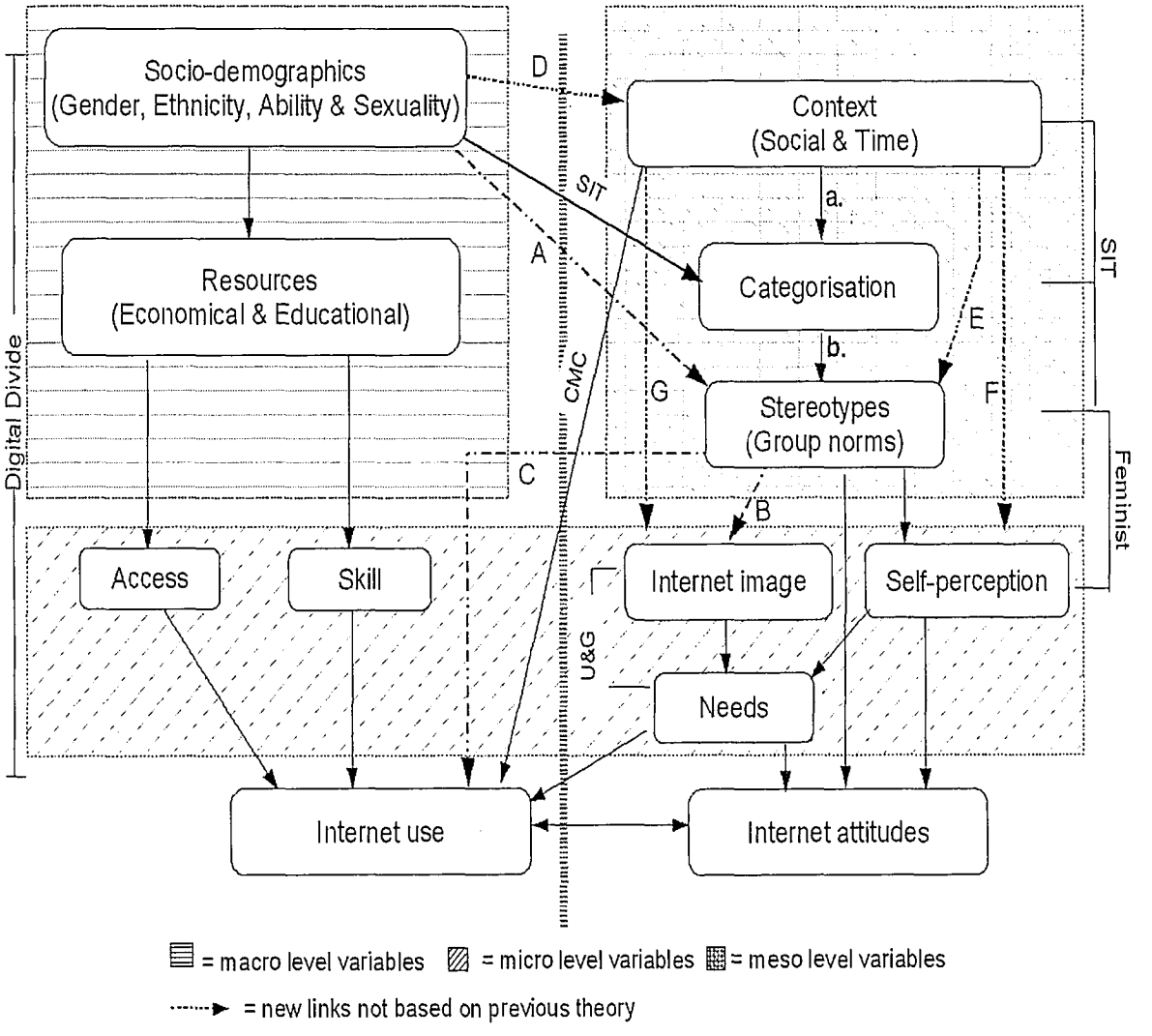
The question to be answered in this section is:
Q3.2 *Which hypotheses arise when macro, meso and micro frameworks are combined into one model?*

The rest of this section provides a detailed explanation of the construction of different paths in the model presented in Figure 3.7 (p.89). The logic behind this comprehensive model is derived from the different approaches to the relationship between macro, micro and meso variables and can be broken down into 4 underlying processes:

1. Micro variables mediate the relationship between macro variables and internet use.
2. Micro variables mediate the relationship between meso variables and internet use.
3. Meso variables mediate the relationship between macro variables and internet use.
4. Micro variables directly influence internet use without being influenced by macro or meso variables.

These four processes can be related to the five main theoretical frameworks presented in this and previous chapters.

Figure 3.7 Combined model explaining internet behaviour and attitudes



Note. Labels in grey boxes refer to the theoretical frameworks presented in this chapter.

a. Depends on awareness of (socio-demographic) group membership according to SIT.
b. Depends on affective commitment to the group according to SIDE.

Process 1. The left side of Figure 3.7, separated by the thick dotted line, represents the traditional digital divide approach, where macro factors influence internet use because they influence micro-level variables such as skills and personal access to the internet.

Process 2. On the right hand side of the dotted line in Figure 3.7, Feminist approaches are mapped on the path between the meso-level variables (stereotypes) and internet attitudes and use mediated by the micro variable self-perception. As explained in paragraph 3.1.2, Feminist approaches also adopt the assumptions of the digital divide model on the left hand side of the model.

Process 3. Also on the right side of the dotted line, social identity theory (SIT) adds categorisation and social context to the Feminist approaches and assumes that the meso-level variable categorisation (that is, assigned social identity) mediates the relationship between the macro variable socio-demographics and internet use.

As detailed in previous chapters, although both self-categorisation approaches and SIT take social context into consideration, their interpretation of the nature of its effect is different. SIT assumes that identification with groups takes place mainly when one is expected to interact with other individuals. Self-categorisation theory, on the other hand, assumes that group membership and identification take place even in the absence of others and when the individual is undertaking an action that does not explicitly involve interaction with others.

In SIDE group norms are assumed to mediate the impact of group membership (socio-demographics) only when the person is aware of his or her membership and when affective commitment to this membership is high. The Feminist stereotyping literature assumes that such mediation does not exist and envisions a direct link between stereotypes[13], self-perception and behaviour and attitudes.

[13] While feminist approaches and SIT use different labels, that is group norms versus stereotypes, both can be interpreted to mean the perceptions that group members and others have of the behaviour and attitudes that characterise a group.

Process 4. U&G frameworks are related to the bottom two micro layers that link self-perception, internet image and needs with internet use. The direct link between behaviour and social context is examined by CMC studies.

From the above it follows that the different approaches have conflicting ideas about how to explain internet use. While, according to digital divide frameworks, socio-demographics have an effect on internet use because they are related to resources, social identity and Feminist approaches will argue that this depends on whether stereotypes or group norms are internalised. Micro-level approaches, on the other hand, would emphasise that context, self-perception and personal needs have an impact independent of group membership or resources. There are also contradictions within frameworks; for example, within CMC approaches it is not clear whether anonymity leads to less desirable or more desirable behaviour.

By testing the model presented in Figure 3.7 it is possible to determine which aspects (micro, meso or macro) are the most important in explaining internet use and attitudes of certain social groups and how different types of online behaviour can be explained. Additional relationships, which surface through the combination of frameworks in Figure 3.7, are ignored by the different approaches due to their singular focus on either macro-, meso- or micro-level factors.

Due to the separation of macro and meso processes (1, 2 and 3 on p.89) it is not clear under which circumstances or for which groups resources are important in determining internet use, and for which groups under which circumstances self-perception and group norms are important. Although not specified in theory one would assume that different groups hold different stereotypes about internet use which leads to the added link A in Figure 3.7.

Because meso and micro processes (2, 3 and 4 on p.89) are usually not studied in combination, it is unclear how, for example, stereotypes are related to media images and needs (link B). Meso frameworks assume that stereotypes or group norms only have an influence on internet use and attitudes when these are internalised in self-perception but, arguably there might be a subconscious effect of stereotypes on behaviour even if self-perception has not changed consciously as is sometimes

implied in Feminist approaches to stereotyping. Therefore a direct link between stereotypes and internet use was added to the model (link C).

These extra links allow for the full testing of the theoretical assumption made in Chapters 1 and 2 that meso-level factors such as stereotypes and social context mediate or influence the effects of macro- and micro-level factors on internet use and attitudes.

Social context (i.e. anonymity) is an important element of the model presented in Figure 3.7 but its effect on internet use is not well understood even though it is a fundamental part of meso and CMC frameworks. This element is practically relevant because influencing digital inclusion through controlling the context of internet use could be within easier reach for policy-makers than changing unequal divisions of resources or personal characteristics. Because of the centrality of social context in this thesis, hypotheses were formulated about the relationships between this variable and the other variables in the comprehensive model.

Since no knowledge exists about the exact relationship between anonymity and the other elements of the model in Figure 3.7, hypotheses were formulated in terms of differences and not given a positive or negative direction.

Ha: Different socio-demographic groups have different contexts of use (link D).

Hb: Different social contexts will lead to different influences of stereotypes independent of whether teenagers categorise themselves or are conscious of their membership of that group (link E). For example, in anonymous conditions group norms will be stronger whether one is consciously part of one of these groups or not.

Hc: Different social contexts are related to different perceptions of the self (link F). For example, in anonymous conditions people are more confident.

Hd: Different social contexts lead to different images and therefore needs regarding the internet (link G). For example, in anonymous conditions the internet is seen as an entertainment medium with related entertainment needs.

In summary, the effect of meso and micro factors is hypothesized to vary by contexts of use. This thesis examines how these processes differ through empirical data collection in a survey and an experiment.

The hypotheses presented earlier in this chapter were related to the isolated theoretical models and the added links A to G showed how these can be more extensively connected. The integration of all theoretical models into a comprehensive framework offers the possibility of testing new hypotheses not only about how processes behind internet use differ between contexts but also how they differ between social groups.

Particularly important for this thesis in deriving specific directional hypotheses about the type of processes that take place in different groups is an earlier study by Ellemers et al. (1997) which suggested that low status groups are more likely to be influenced by group norms in their behaviour than high status groups, and that this is especially the case in contexts where only their social or group identity is known. Ellemers et al. did not relate this to internet use but these general assumptions can be turned into hypotheses about processes behind online behaviour in the following ways.

H7a: Social context determines which group membership is activated through explicit reference to this group and therefore influences whether people think of themselves in terms of high or low status in relation to internet use.

H7b: For groups about which high internet status stereotypes (i.e. they use it more, it is important to them) exist in wider society, traditional digital divide indicators and personal (micro-level) indicators are most influential in determining their internet use.

H7c: For groups about which low internet status stereotypes exist, meso-level factors such as group norms or stereotypes are most important in determining internet use and attitudes.

In summary, this thesis hypothesises that processes in groups that have high levels of use and are perceived to be good at using the internet will be better explained by either the digital divide model or by the micro (U&G and CMC) models of internet use (H7b), while the behaviour of those groups who are negatively stereotyped is better understood through meso (SIT and Feminist) models of internet use (H7c). To account for changing contexts, meso-level models should apply in those contexts in

which the person categorises as a member of a vulnerable low status group, while macro- and micro-level models should apply when the person is part of a high status group (H7a).

The final hypothesis to be added is one that argues that there is an alternative explanation for internet use that cannot be captured by the macro, micro or meso approaches presented in this thesis.

Hx: Neither macro-, nor micro-, nor meso-level models explain internet use and a fourth model explains the differences in internet use between social groups.

This alternative explanation is not depicted in Figure 3.7 but would be signified with a direct path between socio-demographics and internet use unmediated by resources, access or skills or any of the other variables in the model.

3.2 Methodology

One goal of this project is to incorporate micro and macro theories into a coherent framework that allows for a better understanding of the processes behind internet use in different social groups. To examine these processes from different angles and to test how they apply under different circumstances this thesis applied three different methods. Interviews were conducted to understand the ways in which vulnerable groups talk about the processes behind internet use. To be able to quantify these processes and model them for different groups the most appropriate method is a survey such as the one conducted for this thesis. Survey data allow a statistical comparison of the processes taking place in different groups and uniquely allow for the multivariate path modelling of these processes. The experiment is able to test what the survey cannot which is the causal effect of context on the processes in the different groups.

The issue addressed in this section is:

Q3.3 *How can the range of methods and statistical techniques applied in this thesis examine the processes underlying internet use by vulnerable groups from different angles?*

3.2.1 Interviews

Since there is very little known about the actual opinions and perceptions regarding the internet of teenagers from ethnic minorities, disabled and LGB groups, it is impossible to design quantitative research instruments such as a survey and an experiment without previous qualitative exploration of these issues. In addition sexuality, ethnicity and disability are issues that young people might find it difficult to talk about and therefore require a subtle approach which examines how they could be addressed in less personal, quantitative research instruments.

The most appropriate method to explore views about a topic that is sensitive and about which detailed insight is scarce is the qualitative interview (Rubin & Rubin 1995; Kvale 1996; Flick 1998, 2000; Jovchelovitch and Bauer 2000; Johnson 2002). Therefore nine interviews were conducted in order to support the two main sources of data collection in this thesis: the survey (see section 3.2.2) and the experiment (see section 3.2.3). The findings were used to inform the phrasing of items in the survey and to drawn to attention any issues relevant to the research question that had gone unnoticed in the existing literature. This section starts with a description of the administrative procedures for the interviews and is followed by a brief overview of which issues were important to these representatives of disabled, African Caribbean and Lesbian and Gay (LGB) groups.

Interviews: Sample

The interviewees were representatives of three student networks at the London School of Economics and Political Science (LSE). These networks represented African-Caribbean (Afro-Caribbean society), LGB (LGBT network) and disabled (Circles network) persons. All the interviewees were between 18 and 35 and lived in the Greater London Area.

Table 3.1 gives the distribution of the interviewees in terms of age, gender and characteristics.

Table 3.1 Composition of the group of interviewees

Individual	Network	Demographics
Interviewee A	Circles	Male (blind) 35 years old
Interviewee B	Circles	Male (cerebral palsy) 19 years old
Interviewee C	Circles	Female (dyslexic) 20 years old
Interviewee D	Afro-Caribbean	Male 20 years old
Interviewee E	Afro-Caribbean	Female 21 years old
Interviewee F	Afro-Caribbean	Female 19 years old
Interviewee G	LGBT	Male 25 years old
Interviewee H	LGBT	Male 24 years old
Interviewee I	LGBT	Female 23 years old

All these individuals agreed to participate in the interview after being given a brief verbal or written explanation of what they could expect. They had relatively broad experience with the internet and had been in contact with it for over 5 years which is close to the average for people of this age group in the UK (Livingstone & Bober 2004; Dutton, DiGenarro & Millwood-Hargrave 2005).

Interview: Procedures

Structured interview techniques were used to design the interview guides, based on the theoretical concepts of access, choice and social identity as described in Chapters 1 and 2 of this thesis. However, in most interviews, these topics flowed naturally from the conversation and did not need priming through questions. For the first part of the interview Flick's (1998, 2000) episodic interviewing technique was used to motivate the interviewees to relate their own experiences in terms of access and the choices they made regarding the use of the internet.[14] These questions were complemented with questions related to the importance of the internet for the community the interviewees were assumed to belong to. During this second part of the interview the significance of social identity was addressed in the context of internet use. The interviews were conducted at LSE at a location preferred by the interviewee; the only condition was that it had to be relatively quiet and that there should be no time pressure.

It is important to note that the interviewees were active members of the student networks and therefore had a special position within their communities. They were also slightly older than the participants in the other empirical phases of this thesis. It should be stressed that the interviews served as preparation for the survey and the

[14] See Appendix I (Interview guide).

experiment and that the number of interviews was too limited to draw broad, in-depth conclusions about internet use by vulnerable groups.

Interviews: Observations

A thematic coding[15] of the transcripts revealed four prominent themes in the discourse around internet use and vulnerability which informed questionnaire and experimental design: anonymity, stereotyping, duration of identity, and youth. These themes mostly came up spontaneously when discussing the benefits of the internet for socially excluded groups and needed no to very little priming through the structured interview guide. A very brief overview of these themes and how they appeared in the interviews is given in this section.

Anonymity

While the interviewees did not always feel anonymity was important to them they could see the relevance for others. There were different types of anonymity recognised by different groups. Anonymity by some was understood as the ability to mask group identity characteristics and others understood it to be the ability to express this aspect of their identity without being asked any further questions about other aspects of their lives.

> *"Positive side is that it allows someone who is afraid to shield himself with anonymity and start to explore tentatively a world that is harsh, that is full of discrimination, to get to know people that are like him bit by bit, earn the trust, get the trust." (Interviewee H)*

Disabled participants could therefore be willing to expose name, age or maybe even address, but unwilling to give health information. In contrast, online a LGB individual might consider any other information personal but would have no qualms about letting others know that they were gay.

Another way of looking at anonymity came up during the interviews. Websites were seen as having implied audiences and could therefore create an environment in which the group was identifiable and the person anonymous. Internet users can identify themselves as part of these groups by visiting these specific websites. This implies

[15] See Flick (2006) for a detailed description of this analytical technique.

giving up a certain type of anonymity by expressing an ethnic, female or gay identity while maintaining personal anonymity.

Stereotyping

The stereotyping of gender, ethnic, disabled and sexuality groups in terms of abilities and attitudes towards the internet appeared consistently throughout the interviews. Even though all the individuals perceived major benefits from internet use for vulnerable groups, they voiced concern that both women and African Caribbean minorities especially suffered from a lack of information about the possibilities that the internet had to offer and subsequently from a lack of interest.

> *"There might be a bit of a stigma, they might think it's a bit geeky. They wouldn't say geeky.... 'not cool'....I used to think that it was quite high tech....posh, but then it wasn't. That might be a bit of a barrier for people here. There is not so much of a black [internet] culture here if you are from the UK" (Interviewee F).*

Having personal experience with the internet did not change the ideas the women and the African Caribbean interviewees had of their skills or of the use of the internet for them and their community. These stereotypes were expressed quite freely by all participants and did not seem to cause any social desirability bias. The male gay interviewees rated their internet skills and that of their community high and assumed this was a result of being excluded in other areas of society, but the African Caribbean interviewees considered their community to be lacking in interest and in quantity of use because they were socially excluded. While the non-disabled interviewees thought the internet would be of high importance for the disabled community, the disabled interviewees stressed that the internet was not more important or different for them and that they were not different as internet users.

Duration of identity

The interviewees who were upfront about their identity in real life were all open about this identity online too. The argument was made that this is normal and expected of those who have been disabled for a longer time or who have been publicly LGB for a longer time. The interviewees in general accepted that for those who had not been 'out' for a long time or were still 'in the closet' the internet could be a more important

environment for self-expression than for people like themselves who had been 'out' for longer.

> *"Somebody who is new to disability would do that [pretend not to be disabled online][16]. Being disabled is part of you, people can get mad at you for pretending to be something that you are not.....The only way I can justify it is that people pay attention to what you say instead of how you look. If they can't see your mannerisms they can only pay attention to what you say." (Interviewee A)*

Youth

Although the focus of this thesis was not generational differences an age gap was mentioned by the interviewees. Confirming other qualitative research (for example MacMillan 2006) the young participants in this study also expressed the idea that the elderly were inherently less skilled and, as a result, a perception of lower internet self-efficacy based on marginal group membership might be found for this group. In fact the older blind interviewee indicated that his internet skills were uncommon for his age and that younger people would probably be better than he was, even though he was a computer programmer.

Interviews: Discussion

The interviews pointed out that internet related issues were not necessarily described by the interviewees in ways that fitted the theory presented earlier. Issues such as anonymity, conspicuousness of identity and stereotypes of in- and out-groups in relation to internet use were all described in more broad and complex ways than could be deduced from the simple measures used in most quantitative research. Based on these interviews new survey questions were designed in relation to anonymity, and specifically formulated in terms of social, group, personal, and physical anonymity (see also section 2.3.4).

Stereotyping was very prevalent throughout the interviews which might have been related to the interviewees' high awareness of their belonging to certain groups. But clearly women were considered to be less skilled and the internet was considered to

[16] *Note.* Words between [ ] inserted by the author.

be less important to them. There was also the perception that within the African Caribbean community there was no 'internet culture', which was interpreted as a form of negative self-stereotyping. That these issues came up spontaneously supported the inclusion of survey questions regarding internet skills and importance for different groups.

Since the duration of group identity, that is whether it was a recent part of the person or a longer term characteristic, came up as an important determinant of what was done online by especially the disabled and the LGB participants, extra questions were included in the survey.

These interviewees described how important certain issues were for themselves and their groups and gave an indication of the terminology used by these groups to talk about internet use. All the participants were representatives of organisations directed at socially excluded youth and can therefore be thought to be very aware of, and more at ease with, their identity. Face-to-face interviews in which the person is easily identifiable probably made it even more difficult for these individuals to talk about their (anonymous) online behaviour. The survey and the online experiment were expected to be a better way to reach those that are currently less comfortable with their identity and those who highly value the anonymity of the internet. In addition, interviews alone do not allow for the generalisation of findings to larger populations, nor are they appropriate for modelling the causes and effects of different factors on behaviour.

3.2.2 Survey

In order to compare the processes behind internet use between the different groups, the use of quantitative modelling techniques was necessary. Surveys allow for the generalisation of findings to populations and for statistical comparisons between individuals and groups (Alreck and Settle 1995; Fowler 1993; Moser and Kalton 1971). Therefore, to compare processes based on relationships between socio-demographic variables, social identity, individual characteristics, and internet use, quantitative data were collected through a survey applied to all the different groups. Because this thesis examines the data with specific theoretical causal models in mind, the quantitative analyses are based on statistical modelling techniques infrequently

applied in internet research. These modelling techniques should offer new insights about internet use by vulnerable groups that are not available through more simple descriptive analysis.

Statistical techniques

Two main multivariate statistical techniques were applied to analyse the survey data and compare the different groups: linear regression and path analysis.

Linear regressions allow for the studying of the unique effect of certain variables on an outcome variable such as breadth of internet use or attitudes towards the internet. To understand the importance of individual variables, linear regressions were conducted and compared between different social groups.

However, this thesis focuses on whole processes and not exclusively on the importance of individual variables or links between sets of two variables. Path modelling makes it possible to study the relationships between these variables, not only through their direct effects on each other but also the indirect effects (i.e. mediation and interaction) in a relatively straightforward way (Kline 1998, 2005). Path modelling further allows for the testing of causal models and the extent to which they explain the different types of uses given to the internet. This type of analysis and the fact that one can determine the levels of importance of the different (micro and macro) variables by statistically controlling for the effect of other variables makes it possible to draw conclusions about the processes that are behind internet use. An alternative to this approach could have been multilevel modelling. However this statistical technique has the disadvantage of making the modelling of causal processes more complex when multiple mediation effects are assumed and when there are multiple unrelated but overlapping grouping variables.[17] Since path modelling applies similar theoretical assumptions to multilevel modelling, and facilitates the testing of entire causal models at the level of the individual (Kline 2005), the decision was made to use path modelling instead of other more restricted multivariate statistical techniques. Further details about statistical assumptions and criteria are addressed in empirical Chapters 4 to 7.

[17] See Hayes (2006) for a detailed discussion of multilevel modelling in communication research.

Path analyses thus allow for statistical testing of the causal assumptions behind explanations of internet use that underlie the digital divide paradigm. The fit of the data to this model can then be compared with models that use SIT or Feminist models as their basis, and the value of different models in explaining internet use by vulnerable groups can be determined. To test the value of different level models, separate analyses will be presented in Chapters 4 (macro - digital divide approach), 5 (micro - U&G and CMC approaches) and 6 (meso - Feminist stereotyping and SIT approach). In Chapter 7 these macro, micro and meso models will be combined and in the same chapter the hypotheses related to the overall model presented in Figure 3.7 is tested through linear regression. These linear regressions point out which individual factors are important in explaining internet use by different social groups. This process addresses systematically the intention of this thesis to compare processes behind the internet use within and between vulnerable groups.

Administration and sampling

The population that the survey aimed to cover were young people between the ages of 16 and 19. Several paths were followed to ensure a representative sample and equal measurement conditions. Over a period of six months 100 schools in the Greater London Area that had different ethnic compositions (i.e. majority white, Asian, African Caribbean or mixed ethnicities) were repeatedly contacted and 15 eventually participated, reaching a fairly even distribution over types of schools (see Table 3.2).

Table 3.2 Sampling of participants from schools that participated in the study

School type	N schools	N participants	% of participants
Mixed	4	303	41
African Caribbean	4	121	16
Asian	4	209	28
White	3	112	15
Total	15	745	100

Note. Not all the participants handed in valid surveys; after revision 730 surveys were considered valid.

Contacting establishments with a majority of African Caribbean students proved especially difficult since these had been under a lot of pressure after negative press about their pupils' results (The Guardian, May 31, 2005) The most frequent reasons given for non-participation were that the establishment was up for an Ofsted review,

that the students should focus on exams, and that the school was already participating in a number of other projects.

Attempts were made to contact groups that work specifically with LGB and disabled teens but internal organisational difficulties (e.g. frequent group leader changes), participant characteristics (e.g. low cognitive abilities of the students), and the lack of these types of organisations for this age group were all obstacles to reaching a satisfactory number of participants through these paths.

The final sample was composed of 710 participants from educational establishments and another 20 from organisations that worked specifically with LGB youth. This resulted in an overall sample with a slight overrepresentation of the Asian group and an equal gender distribution.

Table 3.3 Sample: Ethnicity and gender

	Asian	White	African Caribbean	Other/Mixed	No answer [a]	Total
Boys	135	109	38	36	33	351
	47%	61%	35%	44%	50%	48%
Girls	153	69	72	46	33	357
	53%	39%	66%	56%	50%	52%
Total	288	178	110	82	66	731

Note. Percentages reflect gender within ethnicity.
a) Reflects 'no answer' on ethnicity, all the participants gave their gender.

Of the 731 participants, 1 did not come from England and was not included in the analyses, 20 terminated their participation before they completed the survey and were therefore not included in further analyses. Similarly when the groups were compared in the analyses those who did not report their ethnicity (N=66) were not included in the results. Missing values for individual questions are reported when their operationalisation is discussed in the empirical Chapters 4 to 6.

Weighting

To compensate especially for the low number of African Caribbean male participants the data were weighted so that in every ethnic group the men and women were equally represented, and so that for each gender group the ethnic groups were equally represented (i.e. weighted n=164 for every ethnic group (50% female)). This

weighting procedure allowed for a comparison between the girls and boys, and between the ethnic groups, without the unequal distribution of ethnicity or gender skewing the data. No weight was applied for either sexuality or disability since the numbers of the LGB (n=60) and disabled (n=38) participants were very low and unlikely to have an impact on the differences between the ethnic or gender groups. Comparisons between the LGB and non-LGB and between the disabled and non-disabled teens were made with caution.

It is important to stress that this weighting procedure did not intend to make the results generalisable to the whole population of teenagers in London since, in that case the weight given to the White ethnic group would have been extremely high (92% of the UK population is White, ONS 2005) and the weight of the other ethnicity students would have become too low for the purpose of this research. It was applied only to the descriptive analyses to facilitate the interpretability of the Tables; for path modelling and linear regression procedures, as described further on, this weighting procedure was unnecessary since gender and ethnicity were controlled for.

Design

The questionnaire was partly based on existing measures and partly on measures designed specifically for this survey which emerged from the interviews described earlier (see section 3.2.1). Extra care was taken to include a variety of measures that would make possible testing of the model presented in Figure 3.7 (p.89). Before application the survey was piloted with 20 undergraduate students at LSE from Asian, LGB and African Caribbean backgrounds. Based on their suggestions, questions on skills, stereotypes and group identity were rephrased and moved towards the end of the questionnaire. A more detailed description of the survey items and their construction follows in section 3.2.2.5.

The survey started with less sensitive items (i.e. quantity of media use) and eased itself into more sensitive items (i.e. stereotypes, self-esteem and social identity). The flow of the questionnaire is shown in the diagram presented in Figure 3.8. [18]

[18] For questionnaire see Appendix II (Survey questionnaire).

Figure 3.8 Flow diagram of questionnaire

Social group and resources	Gender and resources (further questions about group membership asked in section about group identity)
↓	
Use	Media and computer use Type of internet use and location of use (home, school, work) Activities on different sites (minority or general sites)
↓	
Attitudes	Evaluation of the importance of the internet and future use Social context of use Evaluation of the impact of the internet in general Internet self-efficacy Evaluation of the impact of the internet on personal life
↓	
Social context	Anonymity of personal information
↓	
Stereotypes	Evaluation of the importance of the internet for different groups Evaluation of the internet skills of different groups
↓	
Personal characteristics	Offline self-confidence
↓	
Group identity	Awareness and importance of Ethnicity, Disability, Sexuality and Gender

Measures

What follows is a brief description of the origin of the measures that were incorporated into the survey. A detailed discussion of the operationalisation of concepts through these methods follows in Chapters 4 to 6 which examine the results of the survey. The measures used to test hypothesis and models in the different chapters are shown by the inserted variables card presented with the thesis.

Socio-demographics or Social group

The participants were asked to indicate their gender, ethnicity, disability, and sexuality (Q1, Q69, Q72 & Q79)[19]. The ethnicity and disability scales were the same as those used in ONS omnibus surveys (ONS 2005). The sexuality items were derived from the NATSAL surveys (NATSAL 2003). To make sure the participants fell into the target population (i.e. 16 to 19 year olds) they were asked to give their age (Q2) and indicate their level of education (Q3). The education measures (Q6) corresponded to those made available by the Qualifications and Curriculum Authority (2004). Most participants were from a sixth form school working towards their A-levels or GCSEs.

Resources

Since traditional indicators of social grade like income do not apply to this age group, the items used by the IEA survey were used in this questionnaire (Q4 & Q5). These measures enquire about the number of books and cars in the household and have been shown to be reasonable proxies for the educational and economic resources of the household the young people come from (Torney-Purta, Lehmann, Oswald & Schulz 2001).

Access

The participants were asked if they had ever used the internet at any of the following locations: home, work, school, community centre, public library, and internet cafés (Q12).

Online confidence: Skills

Research by Livingstone et al. (2005a) showed that a composite measure based on specific skills is a better indicator for skills than questions that ask about general internet competence. The skills measure used in the UKCGO (Livingstone & Bober 2004) survey was adapted for this project (Q41).

Online confidence: Self efficacy

In the past scales used to measure computer self-efficacy were successfully adopted to measure the equivalent for internet use. Scales developed by Durndell & Haag (2002)

[19] Q... indicates the question numbers in the questionnaire. For exact question phrasing see Appendix II (Survey questionnaire).

and Eastin and LaRose (2001) were shown to have high reliabilities ($\alpha \geq .91$). These items were incorporated into the skills scale (Q41). General self-efficacy items used in these studies were adapted to create comparative self-efficacy scales (Q42 to Q44). These items asked participants to compare their level of skill with that of their parents, friends and siblings.

Social context: Anonymity

In the interviews different types of anonymity were flagged up by the participants, in this study items of the UKCGO project were used to measure these different types of online anonymity (Livingstone & Bober 2004).

- *Personal* anonymity questions asked whether nicknames were used, whether a different identity was assumed online and whether people gave away different types of personal information or refused to do so (Q52 to Q63).
- *Social* anonymity was addressed by Q33 to Q35 which asked whether individuals shared their online experiences with others offline.
- *Physical* anonymity was measured by Q36 to Q38 which asked whether anyone was present while they were working online which indicates a more physical type of offline anonymity.
- *Group* anonymity was addressed by Q16 which asked whether they went to sites that were aimed at specific gender, ethnic, sexual or ability groups.

Most of these items were designed for this survey since they were not asked in previous research.

Social Identification: Awareness and Importance of identity

In social psychology different measures have been used to measure the importance and awareness of group membership. The scales used in this survey were adapted from the social identity index developed by Ellemers, Kortekaas and Ouwekerk (1999) (Q70 to Q71, Q76 to Q78 & Q81 to Q86). To these items others were added about the duration of their awareness of their disability and sexual preference. This was done to measure the level of habituation with the group-identity an issue that seemed to be important based on the interviews. Further items about desired invisibility of the group identity were included to address McKenna and Bargh's (1998) idea of concealability of identity.

Stereotypes

The relevance of stereotyping issues was confirmed during the interview stage, in which the respondents demonstrated clear opinions about how groups could be classified in terms of internet importance and skills. The survey questions enquired about this for groups about which stereotypes existed (i.e. women, disabled, ethnic minorities, LGB, young people).

No examples of questions were found that measured people's perceptions of how other groups use the internet or other media, or how good they are at using them. Therefore Q64 and Q65 were designed specifically for this survey.

Internet image

There have been several problems measuring the image a medium has and often this aspect was left out of research by those using the U&G framework. In this study a set of questions was designed that asked the participants how good the internet was at performing 14 different tasks or activities (Q32).

Offline confidence: Self-esteem

A number of questions were asked about the psychological characteristics of the person (Q66). These items were derived from Rosenberg's Self-Esteem scale which has high reliability and validity scores (see Blascovich & Tomaka 1991).

Internet needs

Needs, just as image, have been problematic to measure and are often measured by measuring use. Through adhoc reasoning these uses are then said to reflect high needs that correspond to this use. This survey tried to avoid this by asking the participants to rate the importance of the internet as a medium for 13 tasks and activities (Q30).

Internet attitudes

Q39 and Q40 were directly derived from the UKCGO project and reflect evaluations of the impact of the internet. A further addition derived from the World Internet Project (Cole 2004, 2007) were the items in Q48 which measured the impact of the internet on a more personal level, that is on interactions with others.

Internet use: Quantity

In relation to the quantity of use there were three types of questions. First the participants were asked to indicate how many hours and minutes they spend on different media on an average week and average weekend day (Q7 & Q8). They were also asked (Q14) how frequently they went online, on an 8-point scale ranking from hardly ever to more than once a day. This measure was adapted from the UKCGO survey.

Internet use: Breadth

Traditionally participants have been asked if they used a medium to be informed, entertained or which items they were attracted to in certain media. This traditional way of measuring uses and gratifications obtained gives equal importance to all uses and all media, which might not be very realistic. To incorporate importance and weight of different media uses the Annenberg School of Communications developed an instrument named the Internet Connectedness Index (ICI) (Jung, Linchuan Qiu & Kim 2001, Loges & Jung 2001).

For this research project questions were added to the ICI that related use to different contexts (Q9, Q10, Q12, Q13, Q39 & Q45 to Q47 from ICI, Q15 to Q32 based on ICI but adapted). Q15 enquired about activities done at home, school, and elsewhere. All ICI questions were adapted to test not only what the persons did on the internet but also which decisions they made on where to undertake these different activities. This was done to incorporate ideas presented in SIT and CMC theories that context makes a difference to how people present themselves and how they act online. The thirteen different activities were selected from the ICI and the World Internet Project (WIP) questionnaire (Cole 2004) to reflect a wide variety of uses according to traditional genres such as entertainment, information, education and communication. Some current applications – such as social networking – were not yet popular during the fieldwork period of this study, so were not included. The list of activities is not comprehensive but indicative of the range of uses that teenagers were expected to give to the internet in 2004.

The participants were not only asked what they currently did online on different sites and at different locations; they were also asked to indicate which things out of the list

of activities they were sure to do online in the next 6 months (Q31). This question – the phrasing of which was derived from the WIP survey (Cole 2004) – addresses the likelihood of usage gaps closing in the future. For the same reason, to judge the likelihood of a closing gap, the participants were asked if they would use the internet more than they did a year ago (Q49) and whether they were going to use it more frequently in the future (Q50).

3.2.3 Experiment

While in surveys other influential variables are controlled for statistically, in experiments this is done in the practical design of the experimental situation. Experimental techniques are based on the idea that one can, by keeping all other variables equal across conditions, study the effect of one specific variable on behaviour and attitudes by varying the levels of exposure to that variable from one condition to the next (Gigerenzer 2003). Insko and Schopler (1972) gave the following definition of experiments:

> "...research in which the investigator manipulates the variables whose causal effects he is interested in assessing and randomly assigns subjects to conditions"[20] (p.xv).

In a survey, on the other hand, the researcher can only study variations in circumstances that naturally occur often through techniques based on correlations. A survey allows the researcher to talk about relationships between variables and which factors might be related to others; a causal conclusion is built from theory and based upon logical sequences in time. While the experiment focuses on the effect of one variable and changes it on purpose, the survey only studies the effects of changes that naturally occur and are thus more liable to other explanations of the effects found (Greenwood 1989). The question asked in a survey is 'What happens when real life circumstances are different?' while, in an experiment, the researcher asks the question 'What would happen if we changed these circumstances?'. The idea is that, by keeping all other things constant in the experiment and varying only the variable in which the researcher is interested, the effects of changes in circumstances can be studied even if these changes do not (yet) naturally occur. While a survey might lack the power to explain causality, an experiment might lack the power to explain reality.

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[20] Italics in original.

By combining the two methods it should be possible to say something about both causality and reality.

However, a field experiment does not bring subjects into an artificial situation to participate in the study, but introduces an intervening variable into the natural environment (Harrison & List 2004). In policy terms these experiments could be thought of as interventions. While this counters the most common critique of experimental design, that is lack of generalisability to real life, it brings with it problems of, for example, condition control, self selection in participation and cohort effects (Birnbaum 2000). This thesis steered clear from cohort effects by using a random sample of secondary school students and a random allocation to conditions, avoiding natural units for participation, i.e. classes.

Although CMC and SIDE frameworks examine the relationship between social context and computer use, the causal link between social context and general internet use for different social groups has not yet been tested. Through the application of experimental techniques this study investigates the effects of different social contexts on the internet behaviour of teenagers. The experiment examines whether or not it matters for the young person if they are addressed as a member of a group which is stereotypically perceived to be less digitally included (low internet status).

Design

The framework for manipulating social context (i.e. mode of address) is historically based on those used in CMC and SIDE studies and aims to activate either a low or high or neutral status in relation to internet use. Which groups had a low internet status was determined based on previous research (see Jackson et al. 2001; Ono & Zavodni 2003; Ofcom 2006a-d; Schumacher & Morahan-Martin 2001; Stanley 2003; Wajcman 2004 and section 1.4 of this thesis), the interviews (see section 3.2.1) and the survey (see section 3.2.2) conducted for this thesis. The condition that has traditionally been classified as anonymous in CMC research (i.e. nothing about the person is known) is called neutral in this experiment since, based on what was said in the interviews, it was clear that not being identifiable online does not necessarily mean the person is anonymous in their use. All the conditions, except the neutral,

entailed depersonalisation or deindividuation as defined in SIDE studies (see Lee 2006) since group and not personal identity was emphasised.

The behaviours that were considered for evaluation were those most popular amongst teenagers (Livingstone & Bober 2004) at the time that the experiment was designed; browsing (human rights and health searches) and interacting with peers (chat).

The experiment had a 2 by 3 by 3 (gender x ethnicity x status condition) design. The two explanatory factors were gender, classified as male or female, and ethnicity classified as Asian, African Caribbean and White. The third explanatory variable was condition which was classified as:

- *Neutral*: addresses the participant as a person without mentioning a group.
- *High* status: addresses the person as a member of a group considered to be skilled (young, male or Asian) at using the internet.
- *Low* status: addresses the person as a member of a group considered to be less skilled (female or African Caribbean) in using the internet.

Distribution of participants over conditions

Students from the same schools as those who filled out the survey were invited to participate in the experiment. The fieldwork for this experiment was done a year after the survey and took seven months (March-August 2006) to complete. Since the schools were initially reluctant or lax in participating on their own account, day visits were made to schools and students were asked to participate during school time. The participants were seated individually behind a computer in a class room in such a way that they could not influence or read each others' responses. During the duration of their participation a teacher or researcher was present to guarantee that the experiment was completed by each participant in silence and without interaction between the students.

The distribution of the participants over experimental conditions was automatic and based on software written specifically for this experiment[21]. Members of each ethnic

[21] The software was designed by LSE Information Systems' student Chris Zhang and integrated participant distribution, experimental scripts and data collection.

group were automatically assigned to a reference category which was linked to a higher or lower status depending on their ethnicity and gender (see Table 3.4).

Table 3.4 Structure of automatic assignment to experimental conditions

Reference category / Ethnicity	Ethnicity	Gender		Youth	Personal/ Neutral
		Female	Male		
African Caribbean	20[c]	20[c]	20[b]	20[b]	20[a]
Asian	20[b]	20[c]	20[b]	20[b]	20[a]
White	n/a	20[c]	20[b]	20[b]	20[a]

a. Neutral status
b. High status
c. Low status

The computer programme distributed the participants randomly over the three conditions.[22]

- The first female African Caribbean was assigned to the African Caribbean ethnicity category, the second to the female category, the third to the personal category and the fourth to the youth category. This procedure was identical for the Asian females except that, in the first instance, they were assigned to the Asian ethnicity category.
- The first male African Caribbean and Asian were assigned to the ethnicity category (i.e. African Caribbean or Asian), the next male of these ethnicities was assigned to the male category, the next to the personal category and the last to the youth category.
- The first white female would be assigned to the female category, the second to the personal category and the third white female was assigned to the youth category. Similar procedures were followed for the white males except that they were assigned first to the male category.

In general, it is not unusual for teens from ethnic minorities to be addressed on the basis of their ethnicity. White teens, on the other hand, have less awareness of their ethnicity and can feel accused of being racist if explicitly addressed as White, which

[22] Although it could theoretically be possible that every fifth person who logs in was similar and therefore all the African Caribbean Women who ended up in the African Caribbean category were the same, thus skewing the results, this is highly unlikely since most participants completed the tasks in the class room and had not much liberty to decide when they were going to log in. The procedure followed to assign the participants to the groups is for practical purposes the same as randomisation.

could result in them refusing to participate further. In the design of the experiment different ways of assigning the White subgroup to a White ethnic group category were considered but none was found that could deal with this issue. Therefore there were only two conditions for the white boys: condition 1 (neutral, personal category) and condition 2 (high status, male or youth category). The White and Asian boys could only be placed in either condition 1-neutral or condition 2-high status (there was no low status condition for these groups). The girls and African Caribbean teens could be placed in a neutral, high or low status condition.

Final sample

Great effort was put into reaching the required number of participants in each condition, this proved difficult due to the complex nature of the sample and the preoccupation of many ethnic minority schools with GCSEs and A-level exams. After seven months 206 teenagers had participated and all categories had enough participants to make a comparison feasible (see Table 3.5).

Table 3.5 Composition of gender over conditions

		Category				
		Ethnicity	Gender	Neutral	Youth	N
Teenager's	Girl	17 (59%) [b or c]	39 (41%) [c]	20 (47%) [a]	16 (42%) [b]	92
gender	Boy	12 (41%) [b or c]	57 (59%) [b]	23 (53%) [a]	22 (58%) [b]	114
	All	29 (14%)	96 (47%)	43 (21%) [a]	38 (18%) [b]	206

Note I. Percentages are per category.
a. Neutral condition
b. High condition
c. Low condition

As can be seen in Table 3.5 the distribution of gender was relatively equal across the different categories; however, because of the problems in recruiting enough participants from ethnic minority groups, only the Other ethnic groups were assigned to the youth category (see Table 3.6).

Table 3.6 Sample distribution of ethnic groups over conditions

Ethnicity	Category				Total
	Ethnicity	Gender	Neutral	Youth	
AC	9(4%)[c]	16(7%)[b or c]	7 (3%)[a]		32(16%)
AS	20(10%) [b]	39(19%)[b or c]	19 (9%)[a]		78(38%)
White		41(21%)[b or c]	17(8%)[a]		58(28%)
Other				38(18%)[b]	38(18%)
Total	29(14%)	39(47%)	43(21%)[a]	38(18%)[b]	206

Note. Percentages are based on total number of participants (N=206).

a. Neutral condition
b. High condition
c. Low condition

Because there were fewer African Caribbean teens in terms of total participation there was an overrepresentation of Asian students in the ethnicity category, but an equal distribution of both White and Asian teens in the gender and neutral categories. The implications of these restrictions will be pointed out in the presentation of the findings.

The details of the experimental procedure are discussed in chapter 8 alongside the findings.

In summary, the interviews informed the importance given to topics in the survey and the way in which certain questions were phrased (see section 3.2.1). The survey allowed for comparisons of the processes behind internet use and opinions between and within groups (findings in Chapters 4 to 7). The experiment goes one step further and examines the causal relationship between social context, social identity, status and internet use (findings in Chapter 8).

3.3 Summary and conclusion

The aim of this chapter was to give a schematic overview of the main theories as discussed in Chapter 2 and to formulate hypotheses based on these frameworks in relation to internet use.

The chapter started by modelling internet use according to the traditional macro framework of the *digital divide* which meant incorporating the following variables: socio-demographics, resources, access, skills, and use. The hypotheses related to this model attest that socio-demographics are related to different resources, which in turn determine access and skills and through these the use that the person will give to the internet. Within this framework the relationships between socio-demographics (i.e. ethnicity, gender, etc) and internet use are assumed to exist only because socio-demographics are related to resources; therefore there is no direct link between socio-demographics and internet use.

This was followed by a schematic overview of meso models that deal with stereotyping and social identity. The variables that the *Feminist stereotyping* model added to the digital divide model were: stereotypes, the perception of self and attitudes towards the internet, and social context, awareness and importance of identity from the *Social Identity Theory* (SIT) model. Resources and access play a lesser role in these models which hypothesise that stereotyping, social context (i.e. anonymity) and awareness of social identity mediate the effects of socio-demographics on the perception of self and, through this, on internet use and attitudes. *Self-categorisation theory* was schematised in a way that accounted for the changes in social context which subsequently led to different levels of awareness and importance of group identities.

The final section focused on micro frameworks and schematically showed that these models do not incorporate socio-demographics but start causal explanations with perceptions of self and media images from *Uses and Gratifications* (U&G) frameworks, and with social and time contexts from micro *Computer Mediated Communication* (CMC) models. U&G models hypothesise that different users and people with different images of the internet will have different needs for which they use the medium, and that use that corresponds to these needs leads to positive evaluations of the internet. CMC models assume that social (anonymity) and time (future interaction) contexts directly influence internet use.

These schematic depictions of theories were joined in a comprehensive model that shows how macro-, meso- and micro-level variables can be combined to explain

internet use at an individual level. The hypotheses that arose from this combined model attest that, for groups with a lower status in relation to their internet use, meso-level factors will be more important in determining how they use the internet while, for those groups with high internet status, macro- (resources) and micro- (confidence and needs) level factors will be more important.

The second half of this chapter discussed how a combination of interview, survey and experimental techniques could contribute to understanding internet use. Interviews were argued to be necessary to inform the construction of valid quantitative instruments that allow the testing of the processes behind internet use. This necessity arose from a lack of existing knowledge about the discourses around internet use in vulnerable teenage groups and from the sensitivity of topics related to sexuality, disability and ethnicity. A brief descriptive analysis of these interviews showed that, according to representatives of vulnerable groups, four topics were important in relation to internet use: anonymity, stereotyping, durability of identity and age. These topics were thus included in a survey which reached 730 students between 16 and 19 in London. The chapter detailed the origin of the different items and the reasons for including them. The use of statistical modelling techniques such as linear regression and path modelling to analyse the data was argued to be the only way to study the processes behind internet use and test causal theoretical models. It was argued that the application of these multivariate modelling techniques is infrequent in internet research and could offer new insights by comparing processes between different groups.

However, the survey was not able to address what happens when the circumstances under which the person uses the internet are changed as they might be in a policy intervention. The self-categorisation framework which assumes that social context is variable can therefore not be tested through this survey. To model these effects of context an experiment was designed that manipulated the way in which teenagers were addressed (high or low status) and tested the effects this had on their internet use. 206 teenagers from African Caribbean, Asian and White ethnic backgrounds participated in this experiment.

In Chapters 4 to 7 the findings from the survey are used to model the processes behind internet use based on the frameworks presented in this chapter. Chapter 4 focuses on digital divide hypotheses H1a to H1d and on the explanatory value of resources and access for different groups in different locations. Chapter 5 tests micro-level hypotheses H5a to H6b and focuses on the effects of anonymity, media image and needs. Chapter 6 discusses meso-level hypotheses H2a to H3c and the impact of stereotypes and social identification. Chapter 7 examines the model that combines the three levels of theory and tests hypotheses H7b and H7c thereby focusing on the explanatory strength of macro-, micro- and meso-level factors and of the combined framework. In Chapter 8 additional hypotheses about the influence of social context on internet self-efficacy, attitudes, behaviour and strategies will be tested.

4 Social exclusion and resources: The macro-level approach to internet use

The argument behind macro approaches is that people with equal opportunities to use the internet and its content will have similar levels of internet use. This has led to policy that focuses on resources and access as the solution to digital exclusion (see also section 2.1). In this chapter the assumptions and hypotheses of the traditional digital divide framework as presented in section 3.1.1 are tested in order to answer the following theoretical question.

Q4.1 *Can macro approaches explain differences in internet use by teenagers from excluded groups?*

This chapter is organised into six sections. After a brief review of the digital divide hypotheses the measures used to operationalise the variables in the digital divide model are described. The third section which presents descriptive findings draws attention to differences between social groups on the variables that are part of the digital divide framework. This means that in this section boy and girl, Asian, African Caribbean and White, disabled and non-disabled, and LGB and heterosexual teenagers are compared in terms of resources, access, self-efficacy and use of the internet.

The findings based on path analyses presented in the fourth section investigate to what extent the causal sequence as proposed by the digital divide model could explain internet use by teenagers from the different groups.[23] These path analyses are presented in the following manner: first the model is tested comparing groups of high and low internet status. That is each section first examines path models that test the differences in the processes underlying internet use between girls and boys, and the differences between African Caribbean and other ethnic (Asian and White) teenagers. In each section this is followed by the presentation of a path model which explores the differences between groups of low and high social status that do not differ in terms of

[23] All the analyses in Chapters 4, 5 and 6 were conducted by using the statistical software package SPSS 13.0 with the exception of the path modelling which was conducted using AMOS5.

their internet status. This means that the second model in each section examines differences in the processes between teenagers from Asian and White ethnic groups for a variety of internet uses. Since in this thesis location and type of use is considered an important factor in determining internet use, these analyses are conducted in relation to quantity of use, home use, school use, and future use.

In the final summary and conclusions sections the findings will be discussed in relation to the hypotheses and the explanatory value of the digital divide model.

4.1 Hypotheses and model

If the general assumptions underlying the digital divide framework are correct then socially excluded groups should have fewer resources, less or poorer access to the internet, and should lack internet skills. Following the causal sequence as presented in Figure 3.1 (see section 3.1.1) these three types of disadvantage lead to a narrower and less frequent use of the internet by lower status groups.

Underlying this model is the hypothesis (H1d) that the effect of socio-demographics (i.e. ethnicity, gender, ability and sexuality) on internet use is completely mediated by the resources, access and skills that people have. In a path model this complete mediation would be indicated by the absence of a direct arrow between social group and internet use. This means that under the traditional digital divide paradigm differences between boys and girls can be fully explained by the fact that girls have fewer resources, lack access and have fewer skills than boys. In other words, there is no direct effect of gender on internet use, only an indirect effect via differences in resources, access and skills. The consequence is that the digital divide framework does not distinguish between social and internet status and assumes that the first is always related to the latter.

The next section describes the measures that were constructed based on the survey to test the causal assumptions underlying hypotheses H1a to H1d (see section 3.1.1). These hypotheses will be tested through path modelling and discussed in sections 4.4 and 4.5.

4.2 Measures

This section describes the measures used for the analyses in this chapter.[24] Whenever composite scores or scales were created this is specified in this section. In section 4.3 descriptive differences between groups on these variables are discussed.

4.2.1 Socio-demographics

The socio-demographics indicators, gender (Q1), ethnicity (Q69), disability (Q76) and sexuality (Q79), were measured using the variables as described in Chapter 3. For the purposes of analysis all the Asian (Indian, Chinese, Pakistani and Other Asian) teenagers were grouped together, as were the White (White British and White other) and the African Caribbean (Black Caribbean, Black African and Black Other) teenagers. The other ethnicities (Mixed and Other) were grouped into a category labelled Other.

4.2.2 Resources

The two resource variables (material (Q4) and educational (Q5)) did not measure the same concept, which can be deduced from their relatively low correlation ($r=.16$, $p<0.01$). Although this correlation was significant, the complex relationship with ethnicity (see section 4.3.1) required the use of separate variables in the descriptive and path analyses presented in this chapter.

4.2.3 Access

The survey measured use of the internet in a variety of locations (Q12). Livingstone et al. (2005a) showed that the distinction between home and other access locations was important in explaining internet use and that home access is considered of higher quality than public location access (see also Ofcom 2005). Therefore access in the path analysis was measured by using *home access* as the reference category and no home access as the indicator.

4.2.4 Online confidence

Since the survey could only measure self-reported skill levels, skill was measured through the teenager's confidence in their own skills (Q41) and was labelled online

[24] The specific origin of the items used in the survey was detailed in section 3.2.2.4. Some of these measures are also used in subsequent chapters. For an overview of the measures used in the analysis in the different chapters please see the inserted Variable Card.

confidence. An exploratory factor analysis showed that online confidence could be divided into two subscales labelled technical and social confidence. This two factor solution explained 64% of the variance, and both individual scales which averaged the scores on the individual items on the scale had high alphas (see Table 4.1).[25]

Table 4.1 Online confidence scales (Q41)

Do you feel confident?...	Technical confidence (scale 1-5)	Interaction confidence (scale 1-5)
Downloading documents	0.57	
Understanding words and terms	0.65	
Trouble shooting problems	0.88	
Explaining why task won't run	0.80	
Installing software	0.67	
Cleaning virus	0.64	
Downloading music		0.51
Making new friends		0.70
Participating in discussion		0.73
Sending email for advice		0.69
Gathering information		0.53
Alpha	0.89	0.81

Base. All participants N=668.
Note I. Only factor loadings >0.30 are indicated in the table.

Another measure of internet skill is *self-efficacy.* A composite variable calculated by averaging the scores on three self-efficacy items (skills in comparison with friends, parents and siblings Q42 to Q44) had an alpha of 0.70. This scale ranged from 1 to 5.

For the path analyses a variable labelled *confidence* was created which consisted of the sum of the technical, interaction and self-efficacy scales (scale=3-15).

4.2.5 Internet use

In Chapters 1 and 2 it was argued that the current interest in the digital divide debate has shifted its focus from quantity to 'quality' or 'breadth' of internet use; therefore indicators were designed that were capable of encompassing both these concepts.

[25] In the confirmatory factor analyses performed in this and subsequent empirical chapters the number of factors selected was based on a cut off point of an eigen value larger than 1. Loadings larger than 0.30 after Varimax rotation were considered to be contributing to that factor.

Quantity of use

The question about how much time people spent on activities or on media per day is notoriously difficult to ask and answer Tourangeau (1999). In this thesis the decision was made to use the proportion of the total time spent on media that is spent on the internet as an explanatory or independent variable.[26] This takes into consideration the scales used by different participants caused by different interpretations of average week or weekend days. A comparison between high and low users is not possible using this indicator.

Since the proportion of time spent on the internet (Q7) and the frequency of internet use (Q14) had a high correlation ($r=.51$, $p<.01$), a single indicator was created from these two individual measures of *quantity of internet use*. This was done by multiplication which resulted in a scale with possible scores between 0 and 8 where 0 indicated anyone who used the internet less than once a month or spent, in comparison with other media, no time on the internet. A score of 8 signified a person who used the internet more than once a day and did not spent time on any other media. While 41 participants had a score of 0 none had a score of 8.

In the path analyses the separate *time spent* and *frequency* scales were used as outcome variables to preserve the descriptive value of these individual measures.

Breadth of use

There were two types of questions in the survey that addressed current online activities: what participants did in different physical locations (home, school and elsewhere (Q15)) and how they intended to use the internet in the future (Q31) (see also section 3.2.2.4).

All these activities were analysed for underlying concepts through factor analyses. Based on previous research (Livingstone, Bober & Helsper 2005; Dutton & DiGenarro 2006), it was expected that there would be four general factors underlying internet use: information seeking, entertainment seeking, communication/interaction seeking, and services/civic interest use.

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[26] =total hours of internet use/total hours of media use per week.

However, for most locations, a three factor solution explained most of the variance and showed a good fit and therefore it was decided to follow these findings and create three scales for home use (see Table 4.2). Items that located high on two scales were incorporated into both scales for use. For example, hobby information seeking loaded on both infotainment and leisure use at home.

Table 4.2 Types of use at home (Q15)

Which of these things have you looked for on the internet in the last 6 months at home?	General interest (scale 0-7)	Infotainment (scale 0-5)	Leisure (scale 0-5)
Civic interest	0.46		
Health info	0.54		
Work	0.47		
Travel	0.46		0.42
Arts	0.47		0.38
News	0.31	0.40	
Quizzes	0.50		
Sports info		0.80	
Games		0.54	
Sexual material		0.33	
Hobby info		0.36	0.38
Music			0.58
School			0.54
R^2	0.30	0.11	0.08
Alpha	0.72	0.71	0.72

Base. All participants N=727.

At school the same general distinction can be made between infotainment activities, leisure activities, and activities that focus on general interests (see Table 4.3).

Table 4.3 Types of use at school (Q15)

Which of these things have you looked for on the internet in the last 6 months at school?	General interest (scale 0-4)	Infotainment (scale 0-5)	Leisure (scale 0-3)
Civic interest	0.26		
Health info	0.70		
Work	0.32		
Travel	0.30		0.44
Arts			0.61
News		0.27	
Quizzes		0.38	
Sports info		0.50	
Games		0.59	
Sexual material			
Hobby info		0.48	
Music			0.34
School			
R^2	0.08	0.21	0.09
Alpha	0.46	0.59	0.49

Base. All participants N=727.

The summed score of the items on each scale was used for the descriptive and path analyses in this chapter.

Future use

The *future use of the internet* grouped clearly into three categories: entertainment, general interest, and a group that is defined as stereotypical male activities (see Table 4.4). It seems that when teenagers are asked to indicate which activities they will certainly undertake in the future their choices follow a more traditional pattern of information versus entertainment.

Table 4.4 Types of future use (Q31)

Which of the following things will you definitely do on the internet in the next 6 months?	Information (Scale 0-1)	Entertainment (Scale 0-1)	Male (Scale 0-1)
News	0.34		
Hobby information	0.39		
Quizzes	0.35		
Civic interest	0.40		
Travel	0.45		
Work	0.37		
Arts	0.41		
Games		0.97	
Music		0.30	
Sports			0.79
Sexual material			0.35
School			
Alpha	0.57	0.41.	0.45

Base. All participants N=727.

Besides the 'stereotypical male' uses, only games and music loaded clearly on a separate factor from general interest. The existence of a separate male use factor which has a high loading of pornography could indicate that these teenagers were sensitive to a social desirability bias. However, the finding that sports grouped with sexual material indicates that this is probably due to a gendered orientation in use and that it is in reality a separate type of use and not just a grouping of socially less desirable activities.

All the individual scales (i.e. information, entertainment and male use) have relatively low alphas. To preserve the descriptive value of these scales they were nonetheless used as separate dichotomous indicators in the analyses of the data presented in sections 4.3 and 4.4 of this chapter.

4.3 Descriptives

Simple descriptives give a first insight into the applicability of the digital divide hypotheses and model. The hypotheses about causal relationships between socio-demographics and digital exclusion were based on the assumption that social exclusion is related to a range of other factors that mediate the effect of social group membership on internet use. Therefore this section examines through descriptive statistics whether social group membership (i.e. social status related to socio-

demographics) is related to differences in terms of resources, access, confidence and finally internet use.[27]

All statistical comparisons in this and following descriptive sections are made within groups, that is girls are compared with boys, Asian and African Caribbean teenagers are compared with teenagers of other ethnic groups, disabled teenagers with non-disabled teenagers and LGB with non-LGB teenagers.

4.3.1 Resources

The question based on the digital divide framework in relation to resources is whether low social status groups are disadvantaged in terms of educational and material resources. More specifically the question is:

Q4.2 *Do girls, African Caribbean, Asian, disabled and LGB teenagers have fewer resources?*

Table 4.5 Resources by gender, ethnicity, ability and sexual orientation

	Educational resources	Material resources
Boys	3.90	2.43
Girls	3.74	2.30
Asian	3.62**	2.57**
White	4.17**	2.40**
African Caribbean	3.48**	2.18**
Other/Mixed	4.09**	2.29**
Disabled	4.01	2.41
Non-disabled	3.84	2.36
LGB	3.91	2.34
Non-LGB	3.86	2.37
All	3.83	2.36

Note I. Base is all participants (N=727).
Note II. All data are weighted by ethnicity and gender; scores are averages on scale
** Differences between categories within gender, ethnic, ability or sexuality groups significant at $p<.01$[28]

In answer to question 2, Table 4.5 shows that in this sample:

- The girls were not disadvantaged in terms of resources in comparison to the boys.

[27] For all comparisons of means in this and the following empirical chapters Analyses of Variance (ANOVAs) are used with a 5% probability cut off. See Appendix IV for F statistics for all groups and survey measures.
[28] This means that comparisons in this thesis are made vertically between categories within gender, ethnic, ability and sexuality groups and neither horizontally (between variables) nor between groups.

- The disabled teenagers were not disadvantaged in terms of resources in comparison to the non-disabled teenagers.
- The LGB teenagers were not disadvantaged in terms of resources in comparison to the non-LGB teenagers.
- The African Caribbean teenagers were disadvantaged in terms of educational and material resources in comparison to the other ethnic groups, and the Asian teenagers had a disadvantage in educational resources but an advantage in material resources. The difference in material resources between the Asian and the White teenagers was not significant.

4.3.2 Access

In terms of *access* it is important to note that almost all participants (99%) indicated that they used the internet. The difference should thus not be sought between access and no access but between the types of access and gradations of use.

The question to be answered in this section is:

Q4.3 *Do girls, African Caribbean, Asian, disabled and LGB teenagers have less broad access to the internet?*

Table 4.6 Access locations by gender, ethnicity, ability and sexual orientation

	School	Home	Public library	Internet café	Work	Community centre
Boys	90	87 *	19	20	10	6
Girls	92	80 *	24	19	6	6
Asian	94	91*	24**	13**	6	3**
White	94	85*	12**	12**	7	1**
African Caribbean	92	81*	25**	33**	7	13**
Other/Mixed	90	76*	24**	20**	9	6**
Disabled	100*	70*	20	23	22**	14*
Non disabled	91*	84*	21	19	6**	5*
LGB	94	87	25	39**	12	17**
Non LGB	92	83	21	17**	7	5**
All	91	83	22	20	8	6

Note I. Base is all participants (N=727).
Note II. All data are weighted by ethnicity and gender, use per location in percentages.
* Differences between categories significant at p<.05.
** Differences between categories significant at p<.01.

In answer to Q4.3, Table 4.6 shows that:

- The boys were advantaged in relation to home access but, other than this, there was no gender divide in access.
- For the ethnic groups school and work were the only locations in which access was equal. The African Caribbean teenagers were disadvantaged in relation to home access and advantaged in public spaces. The White teenagers were disadvantaged in all locations but home. The Asian teenagers were very similar to the White teenagers, the only significant difference being that they used the internet more at public libraries.
- Both the disabled and the LGB groups of teenagers were advantaged in using the internet at public locations, but the disabled teenagers were disadvantaged in home access.

4.3.3 Internet confidence

The digital divide framework argues that differences in resources lead to differences in skills and that, therefore, different social groups have different levels of internet confidence. The specific question to be answered here is:

Q4.4 *Do girls, African Caribbean, Asian, disabled and LGB teenagers have lower confidence levels?*

Table 4.7 Internet confidence by gender, ethnicity, ability and sexual orientation

	Online confidence		Self-efficacy
	Technical	Interaction	Comparative
Boys	3.61**	3.74	3.12**
Girls	3.14**	3.69	2.87**
Asian	3.54*	3.81	3.05
White	3.39*	3.73	2.95
African Caribbean	3.20*	3.63	3.03
Other/Mixed	3.39*	3.69	3.01
Disabled	3.08*	3.35**	2.64**
Non disabled	3.41*	3.75**	3.02**
LGB	3.40	3.85	2.99
Non LGB	3.39	3.71	3.00
All	3.37	3.72	2.99

Note I. Base is all participants who answered question.
Note II. All averages are weighted by ethnicity and gender.
* Differences between groups significant at p<.05.
** Differences between groups significant at p<.01.

In answer to Q4.4, Table 4.7 shows that:

- The girls were disadvantaged in online technical confidence and self-efficacy in comparison with the boys. There was no difference in interaction confidence.
- The African Caribbean teenagers were disadvantaged in technical confidence in comparison to the Asian and White teenagers. There were no differences in interaction confidence or comparative self-efficacy.
- The disabled teenagers were disadvantaged in both interaction and technical confidence and in their levels of self-efficacy.
- The LGB and heterosexual teenagers were equally (dis)advantaged in terms of confidence.

4.3.4 Quantity of use

Within the digital divide debate disadvantage in quantity of use can be interpreted as the internet playing a less important role when it is used less in comparison with other media. Therefore the specific question to be answered in this section is:

Q4.5 *Do girls, African Caribbean, Asian, disabled and LGB teenagers spend a smaller proportion of their time on the internet?*

Table 4.8 Proportion of time spent on different media by gender, ethnicity, ability and sexual orientation

	TV	Internet	Personal audio	PCs	Radio	Books	Games
Boys	25	17	15*	14**	6**	6**	10**
Girls	27	15	13*	11**	13**	11**	2**
Asian	27	18**	13	12	8	9	6
White	25	17**	12	13	11	9	5
African Caribbean	26	15**	15	11	10	9	7
Other/Mixed	27	14**	15	12	9	8	6
Disabled	30	11**	17	12	8	5*	8
Non disabled	26	16**	13	12	10	9*	6
LGB	22*	17	12	14	9	11*	6
Non LGB	27*	16	13	12	10	8*	6
All	26	16	14	12	10	9	6

Note I. Base is all participants who answered question (N=697)
Note II. All data are weighted by ethnicity and gender, answers in percentages of total media use time.
* Differences between groups significant at p<.05
** Differences between groups significant at p<.01

Table 4.8 provides the answers to Q4.5.

- The girls and boys did not differ significantly in the proportion of time spent on the internet and, for both, TV took up most of their media use. The girls were not disadvantaged in quantity of internet use.
- For the Asian and White groups the internet was proportionally more important in their media use than for the African Caribbean and other teenagers who spent a smaller proportion of their time on the internet. The African, but not the Asian, teenagers were disadvantaged in their quantity of use.
- The disabled teenagers spent comparatively less time online and were thus digitally disadvantaged.
- The LGB and non-LGB teenagers were equally (dis)advantaged in terms of the proportion of time they spent on the internet.

To judge the likelihood of a closing gap in use three indicators of use were analysed.

Table 4.9 Frequency of current and future use by gender, ethnicity, ability and sexual orientation

	Frequency of use current	Frequency of future use	Quantity of internet use
Boys	6.99**	3.67	1.25*
Girls	6.72**	3.59	1.09*
Asian	7.06**	3.67**	1.36**
White	7.00**	3.59**	1.24**
African Caribbean	6.70**	3.94**	1.08**
Other/Mixed	6.72**	3.77**	0.99**
Disabled	6.35*	3.55	0.80**
Non disabled	6.86*	3.71	1.18**
LGB	6.69	3.49	1.19
Non LGB	6.84	3.73	1.16
All	6.85	3.71	1.17

Note I. All data are weighted by ethnicity and gender, scores are averages on scale.
Note II. For frequency of use reversed scales (8= most frequent, 1= least frequent) were used.
* Differences between groups significant at p<.05.
** Differences between groups significant at p<.01.

Table 4.9 shows that:

- The boys used the internet more frequently than the girls but there were no differences in the increase of use in the future.
- The Asian and White groups used the internet more frequently but the African Caribbean teenagers were more likely to start using the internet more in the future.

- The disabled teenagers were disadvantaged in the frequency of their use and did not intend to increase their future use to a greater or lesser extent than the non-disabled participants.
- The LGB teens were neither advantaged nor disadvantaged in their frequency of use.

4.3.5 Breadth of use

The question in relation to breadth of use is the following:

Q4.6 *Do girls, African Caribbean, Asian, disabled and LGB teenagers use the internet less broadly at home and at school than other teenagers?*

Table 4.10 Types of use at different locations by gender, ethnicity, ability and sexual orientation

	At home			At school		
	General interest	Infotainment	Leisure	General interest	Infotainment	Leisure
Boys	2.69	3.92**	3.01	0.86*	2.17**	0.84
Girls	2.82	2.54**	3.16	1.03*	1.30**	0.91
Asian	3.06*	3.66**	3.36**	0.94	1.71	0.75*
White	2.89*	3.33**	3.21**	0.86	1.64	0.78*
African Caribbean	2.42*	3.00**	2.73**	1.10	1.88	1.02*
Other/Mixed	2.64*	3.04**	3.13**	0.82	1.72	0.93*
Disabled	2.60	2.79	2.57*	0.70	1.78	0.78
Non disabled	2.74	3.25	3.13*	0.96	1.73	0.85
LGB	3.05	3.26	3.27	1.09	1.44	1.07
Non LGB	2.71	3.22	3.08	0.91	1.75	0.84
All	2.75	3.23	3.09	0.94	1.73	0.88

Note I. Base is all participants who answered question (Home N=675, School N=647).
Note II. All data are weighted by ethnicity and gender, answers average on scale.
* Differences between groups significant at p<.05
** Differences between groups significant at p<.01

In answer to Q4.6, Table 4.10 shows that:

- The girls were disadvantaged at home and at school in internet use for infotainment purposes (e.g. news, hobbies, sports, games), but advantaged for general interest (e.g. civic interest, health, travel) activities.
- The Asian teenagers were advantaged and the African Caribbean teenagers disadvantaged for all types of internet activities at home, but the African Caribbean teenagers were advantaged at school in relation to leisure uses. The differences in use between the Asian teenagers and the White teenagers were not significant.

- The disabled teens were disadvantaged for leisure uses at home, but not for any other type of use.
- LGB teenagers were not disadvantaged in their breadth of use neither at home nor at school.

Q4.6 also has to be answered as regards future use.

Table 4.11 Future use of the internet by ethnicity, gender, , ability and sexual orientation

	Information	Entertainment	Male
Boys	43	80**	52**
Girls	44	63**	11**
Asian	44	75	35
White	44	74	35
African Caribbean	41	71	31
Other/Mixed	43	67	27
Disabled	44	69	42*
Non disabled	43	72	30*
LGB	47	60*	29
Non LGB	42	73*	31
All	43	71	31

Note I. Base is all participants who answered question (N=717).
Note II. All data are weighted by ethnicity and gender, answers in percentages.
* Differences between groups significant at p<.05.
** Differences between groups significant at p<.01.

Table 4.11 shows that:

- The girls were disadvantaged in relation to future use of the internet for sexual material and sports (male uses) and for gaming and downloading music (entertainment). There were no future differences in general interest uses.
- The ethnic groups were equally (dis)advantaged in relation to future use.
- The disabled teenagers were more likely to use the internet in the future for male uses (mainly for pornography). They were neither advantaged nor disadvantaged for entertainment or general interest uses.
- The LGB teenagers were disadvantaged in relation to future entertainment use.

This section has shown that different social groups differ in terms of resources, access, skills and internet use. Girls, African Caribbean, Asian and Disabled teenagers could all be considered excluded on at least one of these indicators, but a disadvantage in terms of resources and access did not always correspond to a digital disadvantage in skills or internet use in the same group.

The next section will give an indication which differences between social groups are most prominent, and will test through path analyses whether or not the digital divide model is able to explain these variations in internet use between different social groups and contexts.

4.4 Findings: Testing the causal sequence in the digital divide model

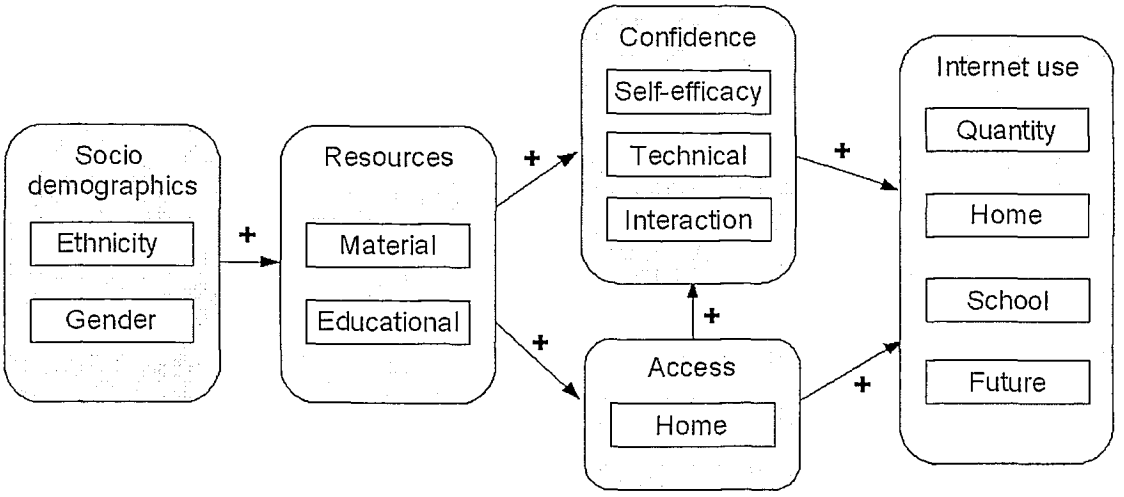
The most efficient way to test the causal model implied by the digital divide framework is through the use of path modelling (Kline 2005). Although it is not possible to determine causality based on cross-sectional data such as those gathered in the survey, it is possible to test whether the causal assumptions underlying certain theoretical frameworks fit the empirical data. Path modelling allows the testing of the fit of a causal model against the data and is commonly used to assess the relative importance of various direct and indirect causal paths to the dependent variable. The relationships between the variables are based on partial correlations controlling for all other variables in the model. Since several possibilities usually exist for ordering the variables and drawing direct or indirect causal links between different variables, the theoretical framework used is the driving force behind the construction of a path model.

In relation to the path models presented in this section there is one main question that will be addressed:

Q4.7 *To what extent can the digital divide model explain the processes behind internet use in socially and digitally excluded groups?*

Figure 4.1 shows the model in which the processes behind internet use by girls and boys, and by the different ethnic groups, are sequentially ordered according to the digital divide hypotheses. The Figure depicted is similar to the model presented earlier in Figure 3.1 but incorporates the measures that operationalise the general concepts as described in section 4.2.

Figure 4.1 Model of internet use based on the digital divide model



Note. Arrows indicate assumed causal paths. Square boxes indicate how the general concepts (social group, resources, confidence, access, and internet use) have been operationalised.

Figure 4.1 shows, for example, that socio-demographics (or social status measured by reported gender and ethnicity) are hypothesised to have an indirect effect on confidence and access through the mediating effect of resources.[29] More importantly, it also shows that there is not assumed to be any direct relationship between social status based on socio-demographics and internet use. In this model socio-demographics only lead to lower internet use because it is related to fewer resources, which leads to a lack of confidence and access which then cause a lower frequency and level of use at home, at school and in the future.

Using path modelling it is therefore possible to test H1a to H1d (see section 3.1.1). In this section the examination of the findings will focus on the extent to which the assumptions underlying these hypotheses can be supported. A total of eight models will be fitted to the data. First, a model will be tested that explores the differences between high and low internet status groups. These models are indicated in the caption with (a). Second, a model is presented in each section that compares high and low social status groups which have a high internet status, incorporating the effect of gender within these groups. These models are indicated in the caption with (b). These two models are compared across four contexts of use (quantity, home, school, and future).

[29] Since the LGB and disabled groups were very small and had very few significant correlations with use these variables were left out of the equation. For correlations between all the variables in the model see Appendix V.

Four indicators (χ^2, CFI, RMSEA, and NC) are reported for each model. All can be used to measure model fit, but due to the complexity of the models and the size of the sample the CFI and RMSEA are given preference when conclusions contradict (see also Bollen 1998; Kline 2005). The disadvantage of the CFI indicator is that it compares a model with the baseline model that assumes all variables are independent, which makes it less robust and more prone to providing a good fit when in reality there is none. RMSEA is the least sensitive to sample size and corrects for model complexity and is therefore preferred for model comparisons in this thesis. A good fit on these indicators does not mean each particular part of the model fits well. Alternative models have a similar goodness of fit. Therefore while an acceptable fit indicates that the model is not a bad fit it does not guarantee that it is the best or even a good fit.

The traditional digital divide model which tests the mediating effects of resources, access and confidence on the relationships between ethnicity, gender and quantity of use was fitted to the data first.

4.4.1 Quantity of use

The question to be answered in this section is: Q4.8 *Can the digital divide model explain quantity of internet use in groups with different social and internet statuses?*

Internet status comparison

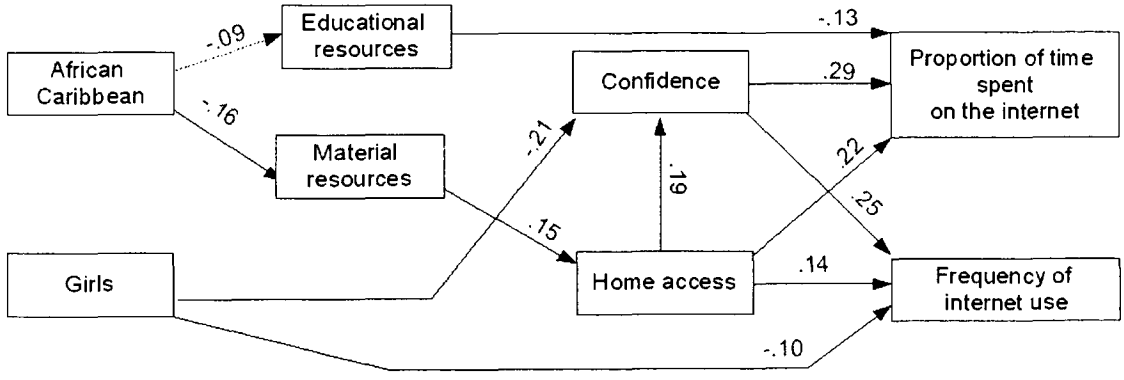
The African Caribbean teenagers and the girls were assumed to be of low internet status (see section 1.4.4). The traditional digital divide model was first tested with the African Caribbean teenagers and the girls as the low internet status reference categories, comparing the processes behind their internet use with the boys and teenagers of other ethnicities with high internet status.

The digital divide model for quantity of use (depicted schematically in Figure 4.1) fitted the data marginally on the RMSEA, but not on CFI or Chi-square indicators ($\chi^2(16)=66.28$, p=.00; CFI=.89; RMSEA=.07 (c.i.=.05-.08); NC=4.14;

AIC=122.28).[30] Based on the theory presented in Chapter 2, one could argue that certain paths are missing that might explain the lack of fit for the digital divide model presented in Figure 4.1. For example, meso-level theory, seen as an important mediator between individual behaviour and macro factors in this thesis, would stipulate that besides resources other factors such as stereotypes determine internet skills and use (see Wajcman 2004). Therefore direct links between the socio-demographic indicators (i.e. ethnicity and gender) and the confidence and access variables[31], and a direct link between these indicators and quantity of use were added to the model. If these direct links were found to be significant, other processes outside the scope of the digital divide framework could explain internet use by socially and digitally excluded groups. If the adjusted model with the added links fits better, further analyses incorporating meso variables can be justified based on the findings.

When the model was constructed incorporating these added paths it fitted the data well on all indicators for complex models (see Figure 4.2).

Figure 4.2 Path model (a): Quantity of use based on digital divide model[32]



Base. African Caribbean, Asian and White participants (N=551).
Note I. $\chi^2(14)=22.64$, p=.07; CFI=.98; RMSEA=.03 (c.i.=.00-.06); NC=1.62; AIC=82.64
Note II. Coefficients are standardised path coefficients. Non-significant paths are not indicated and paths that have .05<p<.01 are indicated by a dotted line.

[30] Criteria for good fit χ^2 p>.05; CFI>.90; RMSEA≤.05 (c.i. ≤.10); NC≤3. Criteria for reasonable fit RMSEA ≤.08 (c.i. <.10); NC≤5. (Kline 2005, p.135-142).
[31] The access variable did not measure whether they had access at home, but whether they used a home connection to access the internet. Stereotypes and group norms might have had an influence on the decision to make use of a home connection.
[32] For full details of coefficients and loadings see Appendix VI.

This model explained 11% of the variance in frequency of use (R^2msc[33]= .11) and 18% of the proportion of media use taken up by the internet. The relationship between ethnicity and use is fully mediated by resources and access (see Figure 4.2).

The *African Caribbean* teenagers had fewer material resources (β=-.16) and therefore less home access (β=-.16*.15) and less confidence in their skills (β=-.16*.15*.19) which resulted in a lower quantity of use. There was also a weak relationship between ethnicity and educational resources (β=-.09), which were directly and negatively related to the proportion of time the teenagers spent online (β=-.13). This effect of educational resources is contrary to the negative effect on internet use by material resources. As a result the total effect of ethnicity on proportion of time spent online was close to zero (βtot=.01) and the total effect on frequency of use was insignificant (βtot=.00). Therefore, the processes for the digitally and socially excluded African Caribbean group seem to correspond to those hypothesised by the traditional digital divide model for quantity of internet use. However, this did not lead to the expected outcome that African Caribbean teenagers spend less time online.

There was a direct relationship between gender and quantity of use (β=-.10) not mediated by any of the other variables in the model. Notwithstanding this direct relationship, the main effect of gender on both proportion of time spent online and the frequency of use was explained by the direct relationship between gender and confidence (β=-.21*.29&.25).

Social status comparison

In the second stage of the analysis the Asian instead of the African Caribbean teenagers were used as the reference category for ethnicity. Since the Asian and the White teenagers were assumed to be relatively similar in terms of internet status (access, skills and use) and dissimilar in social status (see section 1.4.4), it should be possible to understand processes behind internet use based on digital and social exclusion separately by comparing the model presented in the previous section with the one presented in this section.

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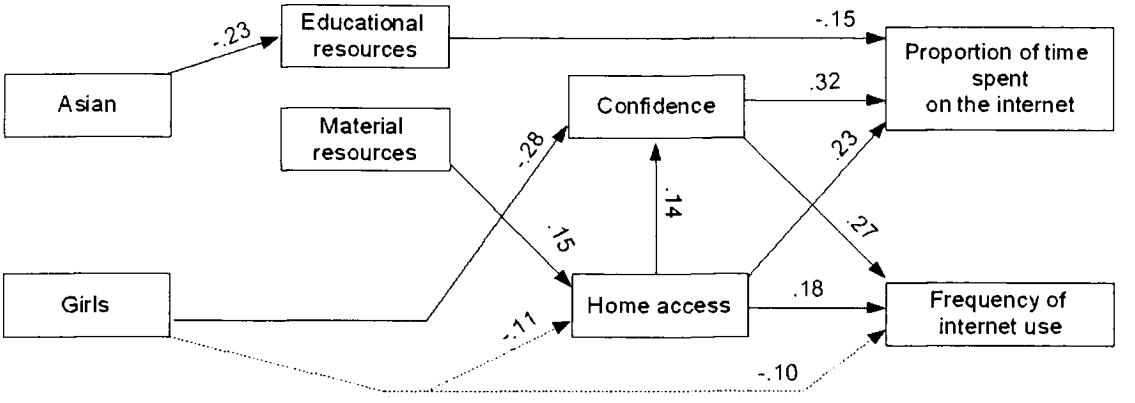
[33] R^2msc = Squared multiple correlation, the explained variance of the model for a particular variable.

The model based on the traditional digital divide framework (presented in Figure 4.1) did not fit when comparing low social status Asian with high social status White teenagers ($\chi^2(16)=78.02$, p=.00; CFI=.87; RMSEA=.07(c.i.=.06-.09); NC=4.88; AIC=134.02). Therefore the same procedure was applied as for the African Caribbean teenagers to understand whether other processes might lie behind quantity of internet use.

Figure 4.3 Path model (b): Quantity of use based on digital divide model



Base. Asian and White participants (N=468).
Note I. Coefficients are standardised path coefficients. Non significant paths are not indicated and paths that have .05<p<.01 are indicated by a dotted line.
Note II. $\chi^2(15)=34.47$, p=.00; CFI=.94; RMSEA=.05(c.i.=.03-.08); NC=2.30; AIC=92.47.

The model in Figure 4.3 explained 15% of frequency of use and 20% of proportion of use. Because the Asian teenagers had significantly less educational resources (β=-.23) than the White teenagers they spent a bigger proportion of their time on the internet. This direct effect of educational resources contradicts the expectations of the digital divide framework and is difficult to explain; it results in social exclusion (ethnicity) having a positive total effect on proportion of time spent online (βtot=.03). This total effect confirms that the Asian teens could be considered of higher internet status than the White teenagers.

The effects of gender on frequency (βtot=-.19) and proportion of media use (βtot=-.12) were larger than those of ethnicity and not mediated by resources. For the Asian and White teenagers the effects of gender were similar to those found earlier in the comparison that also incorporated the African Caribbean teenagers (see Figure 4.2),

with the exception that in this high internet status group the girls were less likely to have accessed the internet at home (β=-.11).

In relation to the specific hypotheses (see section 3.1.1), these models of quantity of use by socially and/or digitally excluded teens show that:

⇒ *H1a* is supported[34] to the extent that low social status based on ethnicity was related to lower resources.

⇒ *H1b1* is supported since material resources were positively related to home access, but cannot be fully supported because there was no relation between resources and confidence.

⇒ *H1b2* is supported since home access was related to higher confidence.

⇒ *H1c* is supported since higher confidence and better access were related to more frequent internet use.

⇒ *H1d* can be supported for low social and internet status groups since the relationship between ethnicity and quantity of internet use by the African Caribbean teenagers was mediated by resources, access and confidence (see Figure 4.3).

⇒ *H1d* can be only partially supported for low social and high internet status groups since resources mediated the relationship between Asian ethnicity and future internet use, but access and confidence did not (see Figure 4.4).

⇒ *H1d* can be partially supported for low internet and high social status groups since confidence mediated the relationship between gender and future internet use but resources did not, and access only mediated weakly (see Figures 4.3 and 4.4).

The AIC, an indicator on which non-hierarchical models can be compared, shows that the digital divide model is more appropriate to explain the differences in quantity of internet use between low and high internet status groups (AIC=82) than it is to explain the differences between low and high social status teenagers (AIC=93).

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[34] Support for a hypothesis in this thesis should be interpreted as a rejection of the alternative, H0, which hypothesizes that there are no significant relationships between variables or no significant differences between groups.

4.4.2 Home use

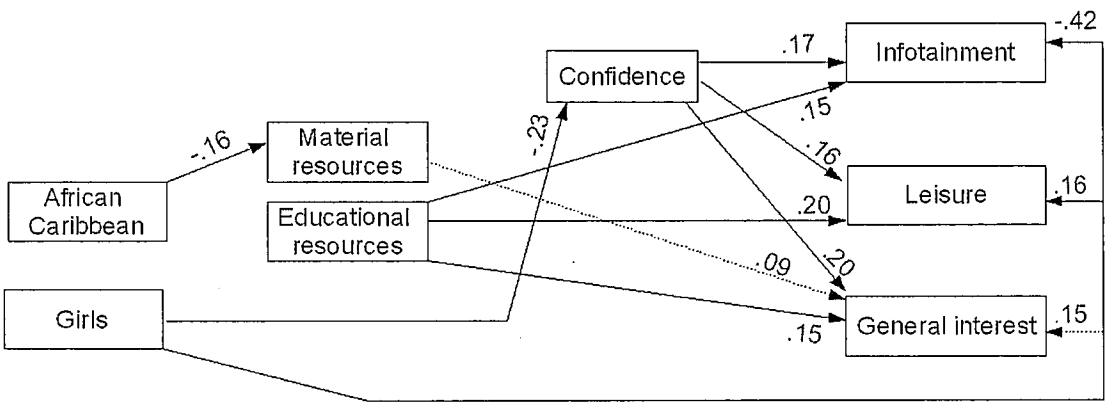
It is not just quantity of use that is of interest to digital divide scholars and policy-makers whose interest has shifted to include breadth of use in different locations.

The question to be answered in this section is: Q4.9 *Can the digital divide model explain internet use at home by groups with different social and internet statuses?*

Internet status comparison

The model that compared groups with different internet statuses based on the traditional digital divide model (see Figure 4.1) did not fit on any of the indicators.[35] Therefore similar reasoning was used as for the modelling of quantity of use by adding the direct paths between gender and ethnicity and confidence, access, and use.

Figure 4.4 Path model (a): Home use based on digital divide model[36]



Base. African Caribbean, Asian and White participants who have home access (N=500).
Note I. Coefficients are standardised path coefficients. Paths that are not indicated are fixed with a coefficient of 0 and paths that have .05<p<.01 are indicated by a dotted line.
Note II. $\chi^2(11)=13.83$, p=.24; CFI=1.00; RMSEA=.02 (c.i.=.00-.06); NC=1.26; AIC=79.83
Note III. Access is omitted as a variable because all the teenagers on which this model was tested had home access.

The model in Figure 4.4 showed good fit on indicators for complex models and explained 8% of the variance in general interest use at home, 26% of infotainment use, and 8% of leisure use.

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[35] Internet status comparison $\chi^2(18)=324.00$, p=.00; CFI=.68; RMSEA=.17, (c.i.=.15-.18); NC=18.00; AIC=376.01.

[36] In this model home access is not included because all those who answered the questions for home use had home access.

In the group that used the internet at home, the *African Caribbean* teenagers had less material resources (β=-.16) but educational resources were not different (see Figure 4.6). Due to this lack in material resources the African Caribbean teenagers were less likely to use the internet at home for general interest topics (βtot=-.01). Educational resources were directly and positively associated with infotainment (β=.15), leisure (β=.20) and general interest (β=.15) uses at home but, since there was no relationship between ethnicity and educational resources, the total effect of ethnicity on infotainment and leisure use was zero. Thus, even though the relationship between ethnicity and internet use was mediated by (material) resources in correspondence to the digital divide model, these relationships were too weak to have a large effect on home internet use.

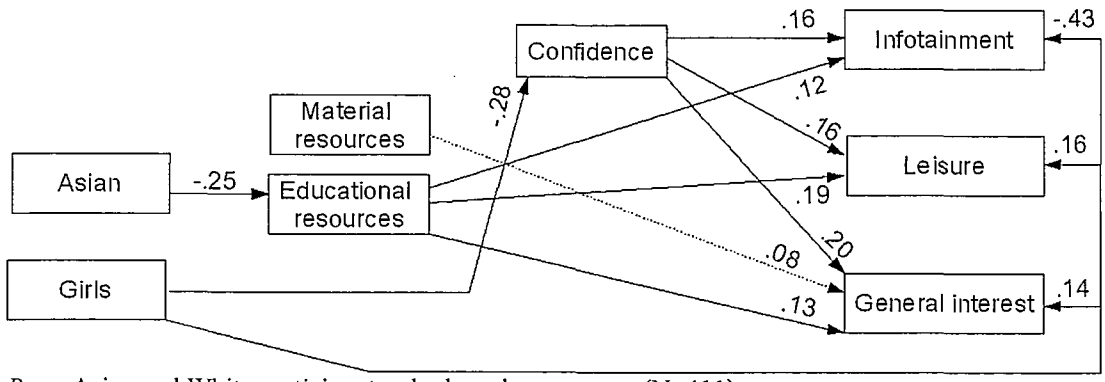
As was demonstrated before, the *girls* were less internet confident which meant that at home they used the internet less broadly. However, this effect was countered by the direct positive relationship between gender and general interest (β=.15) and leisure use at home (β=.14), and increased by the direct negative relationship with infotainment use (β=-.42). The boys undertook infotainment activities more often than the girls independent of resources, access or confidence levels. This resulted in negative total effects of gender on infotainment (βtot=-.46) and positive effects on general interest (βtot=.10) and leisure use (βtot=.13).

Social status comparison

The traditional digital divide model (see Figure 4.1) fits badly for the model that uses the *Asian* teenagers as the reference category for ethnicity.[37] The adapted model that includes a link between socio-demographics and confidence is a better fit (see Figure 4.5).

[37] $\chi^2(19)=238.53$, p=.00; CFI=.65; RMSEA=.17, (c.i.=.15-.19); NC=12.55; AIC=288.53.

Figure 4.5 Path model (b): Home use based on digital divide model



Base. Asian and White participants who have home access (N=411).
Note I. Coefficients are standardised path coefficients. Paths that are not indicated are fixed with a coefficient of 0 and paths that have .05<p<.01 are indicated by a dotted line.
Note II. $\chi^2(11) = 14.12$, p=.23; CFI=1.00; RMSEA=.03(c.i.=.00-.06); NC=1.28; AIC=80.12.

For these high internet status groups the model in Figure 4.5 explained 7% of the variance in general interest use at home, 27% of the variance in infotainment and 7% of the variance in leisure use.

The Asian teenagers had less educational resources (β=-.25) and therefore used the internet less at home. They used the internet slightly less at home than the White teenagers for infotainment (βtot=-.03), leisure (βtot=-.05) and for general interest (βtot=-.03) activities. There was no difference in the effect of gender between the comparisons that used either internet (see Figure 4.6) and social status (see Figure 4.7) as their starting point.

Since the relationship between the explanatory variables should not change in the models presented in the rest of the chapter, hypotheses H1a to H1b1 will not be discussed further until section 4.5. What follows is a discussion of the findings as regards the remaining hypotheses.

⇒ *H1c* is supported since higher confidence was directly related to broader internet use at home.

⇒ *H1d* can be supported for socially and/or digitally excluded groups since, for internet use at home, the relationship between ethnicity and internet use was mediated by resources. However, since the relationship between ethnicity, resources and use was not mediated by confidence this support is only partial.

⇒ *H1d* can be partially supported for digitally excluded and socially included groups since the relationship between gender and home use was mediated by confidence but not by resources.

This model fits equally well for the internet status comparison (AIC=80) as for the social status comparison (AIC=80).

4.4.3 School use

The traditional digital divide model for school use is equal to that of home use except for the insertion of home access as a mediator between resources and use.

The question to be answered in this section is: Q4.10 *Can the digital divide model explain internet use at school by groups with different social and internet statuses?*

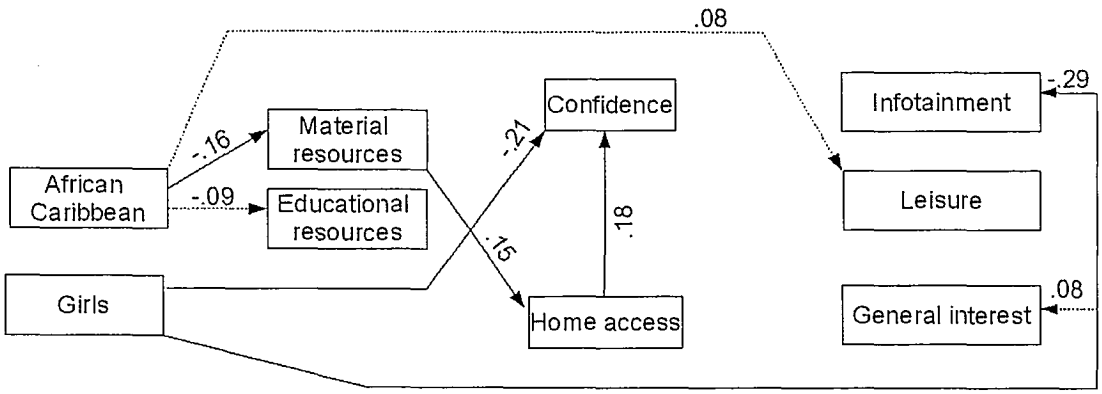
Again the explanatory power of the traditional digital divide model (see Figure 4.1) is poor; no fit can be established on most of the indicators for either the internet[38] or the social status comparison[39].

Internet status comparison

Figure 4.6 shows the adjusted model for school use.

[38] $\chi^2(27)=132.85$, p=.00; CFI=.74; RMSEA=.08 (c.i.=.07-.10); NC=4.92; AIC=186.85.
[39] $\chi^2(28)=132.43$, p=.00; CFI=.71; RMSEA=.09 (c.i.=.07-.11); NC=4.73; AIC=184.43.

Figure 4.6 Path model (a): School use based on digital divide model



Base. African Caribbean, Asian and White participants (N=578).
Note I. Coefficients are standardised path coefficients. Paths that are not indicated are fixed with a coefficient of 0 and paths that have .05<p<.01 are indicated by a dotted line.
Note II. $\chi^2(23)=35.01$, p=.05; CFI=.97; RMSEA=.03 (c.i.=.00-.05); NC=1.52; AIC=97.01.

The model in Figure 4.6 had a good fit but explained only 1% of general interest use at school, 9% of infotainment use and 1% of leisure use. This could be caused by lower variance in these types of uses at school ($\sigma^2=6.26$) than at home ($\sigma^2=8.35$).

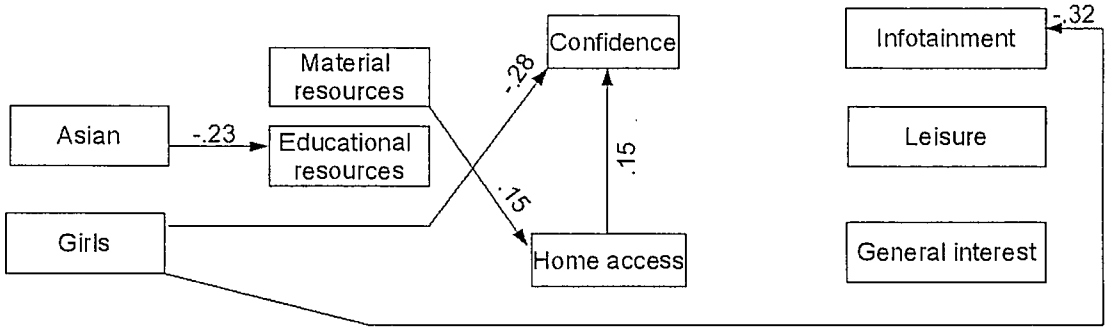
In the model testing that included both higher and lower internet status *ethnic groups* (see Figure 4.6), the African Caribbean teenagers had fewer resources (β=-.16 & β=-.09), and subsequently less home access (β=-.16*.15) but this difference in access and therefore confidence did not translate in different uses of the internet at school. There was however a significant difference between African Caribbean and other teenagers in leisure use of the internet at school (β=.08) which could not be explained by any of the factors in the macro model.

Consistent with findings for other locations, the path between *gender* and internet use at school was not mediated by other variables (see Figure 4.8). The girls used the internet more at school for general interest topics (β=.08) and less for infotainment (β=-.29) independent of their level of access, confidence or resources. While before there was a link between confidence and use, at school this was not the case and thus the lower confidence levels of the girls (β=-.21) did not affect their internet use in comparison to the boys.

Social status comparison

That school use is different from home use could also be observed when the *Asian* ethnic group was taken as the reference category (see Figure 4.7).

Figure 4.7 Path model (b): School use based on digital divide model



Base. Asian and White participants (N=468).
Note I. Coefficients are standardised path coefficients. Paths that are not indicated are fixed with a coefficient of 0 and paths that have .05<p<.01 are indicated by a dotted line.
Note II. $\chi^2(28) = 40.59$, p=.03; CFI=.96; RMSEA=.04 (c.i.=.01-.05); NC=1.56; AIC=96.59.

Only 10% of infotainment use was explained, and neither general internet use nor leisure use could be explained by the variables in this model. That school use was not dependent on confidence or even resources became clearer when the socially included and excluded teenagers were compared in their school use. The relationships that were strongest in this model were those between gender and infotainment use (β=-.32) and between gender and confidence (β=-.28). Ethnicity had neither a direct nor an indirect association with school use. This supported the absence of a difference between the high internet status ethnic groups at school and confirmed differences found between the boys and girls.

For school use the models in Figures 4.6 and 4.7 show that:

⇒ *H1c* is not supported since confidence and home access were unrelated to internet use at school.

⇒ *H1d* cannot be supported for low social and/or internet status groups since for internet use at school the relationship between ethnicity, gender and school use was not mediated by resources, access or confidence.

The similarity of the models for social and digital exclusion comparisons at school is confirmed by their equal AIC index (AIC=97).

4.4.4 Future use

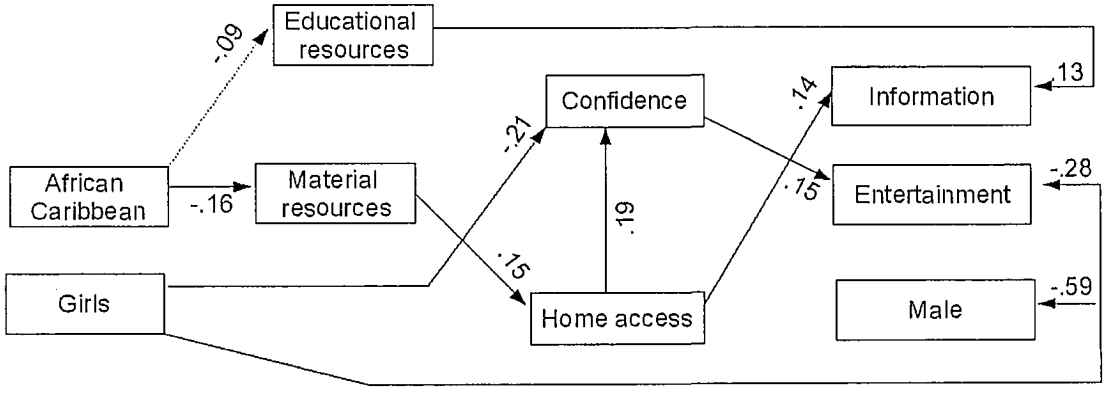
The next and last step in the analysis was an attempt to explain the different types of predicted future use by using the traditional digital divide model.

The question to be answered in this section is: Q4.11 *Can the digital divide model explain future internet use by groups with different social and internet statuses?*

Internet status comparison

The traditional model (see Figure 4.1) again had poor fit.[40] Further adaptation of the model by adding paths that were not hypothesised under the traditional digital divide framework improved the fit of the model considerably (see Figure 4.8).

Figure 4.8 Path model (a): Future use based on digital divide model



Base. African Caribbean, Asian and White participants (N=551).
Note I. Coefficients are standardised path coefficients. Paths that are not indicated are fixed with a coefficient of 0 and paths that have .05<p<.01 are indicated by a dotted line.
Note II. $\chi^2(21)$ =40.75, p=.01; CFI=.96; RMSEA=.04 (c.i.=.02-.06); NC=1.94; AIC=106.75.

This model that used the African Caribbean teenagers and the girls as a reference group explained 4% of the variance in future information seeking, 12% of the variance in future entertainment use and 35% of male uses of the internet.

Since the relationship between *ethnicity* and material resources was again negative, ethnicity was indirectly related to lower access at home (β=-.16*.15), which in turn was directly related to lower skill levels (β=-.16*.15*-.19), and to less information

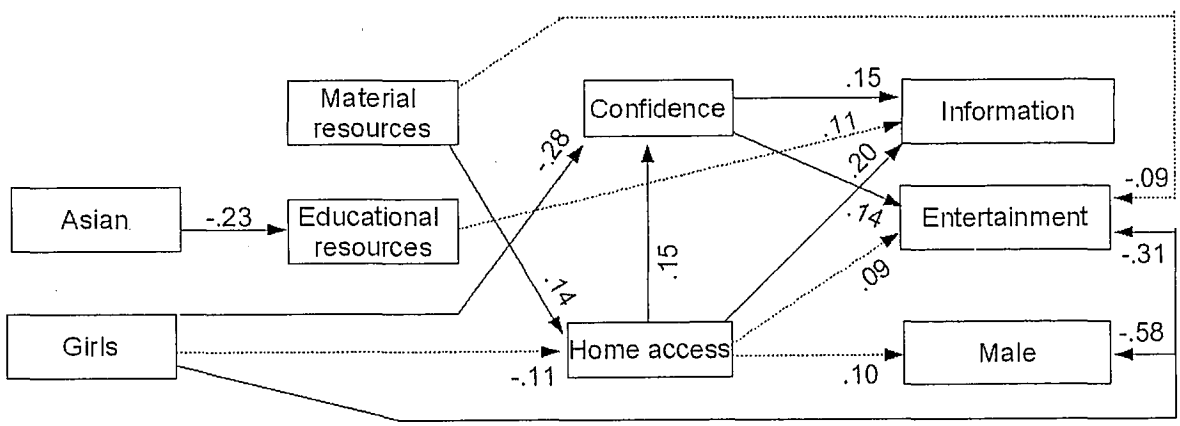
[40] Internet status $\chi^2(25)$=343.69, p=.00; CFI=.38; RMSEA=.15 (c.i.=.14-.16); NC=13.75; AIC=401.69; Social status $\chi^2(23)$=280.62, p=.00; CFI=.45; RMSEA=.15 (c.i.=.14-.17); NC=12.20; AIC=342.62.

and less entertainment use (βtot=-.01) in the future. Fewer educational resources had a direct negative effect on information use (β=.13). Due to this twofold mediation by resources the African Caribbean teenagers were mainly disadvantaged in terms of future information use (βtot=-.02).

As before the differences between the boys and *girls* required additional processes outside the digital divide framework to explain what kind of use teenagers will give to the internet in the future. The girls were less confident, independent of resources, and would therefore use the internet less for entertainment in the future. This effect was not completely mediated by confidence since there was also a direct link between gender and entertainment (βtot=-.31) and male uses (βtot=-.59).

Social status comparison

Figure 4.9 Path model (b): Future use based on digital divide model



Base. Asian and White participants (N=424).
Note I. Coefficients are standardised path coefficients. Paths that are not indicated are fixed with a coefficient of 0 and paths that have .05<p<.01 are indicated by a dotted line.
Note II. $\chi^2(17) = 19.89$, p<.28; CFI=.99; RMSEA=.02 (00-.05); NC=1.17; AIC=93.89.

The digital divide model explained 9% of the variance in information use, 36% in male use and 16% in entertainment future uses in the comparison of future use between socially excluded and included groups. The model in Figure 4.9 was very different from the model that compared the African Caribbean with the high internet status teenagers.

There was a direct relationship between material resources and entertainment uses (β=-.09) and there were relationships between home access and all future uses

unmediated by confidence (see Figure 4.12). These differences in use between the Asian and White teenagers were negligible (βtot=.00). Another difference was that the girls' disadvantage in home access (β=-.11) led them to use the internet even less for male activities (β=-.11*.10). This relationship was not important in comparing teenagers who were of both low social and internet status (see Figure 4.11). Thus, for the group of high internet status teenagers, gender mattered more in determining future internet use than it did in the group that included digitally excluded teenagers.

Figures 4.8 and 4.9 show that:

⇒ *H1c* is supported since higher confidence was directly related to broader future internet use.

⇒ *H1d* can be supported for low social and internet status groups since the relationship between ethnicity and future internet use by the African Caribbean teenagers was mediated by resources, access and confidence.

⇒ *H1d* can be partially supported for low social and high internet status groups since resources mediated the relationship between ethnicity and future internet use, but access and confidence did not.

⇒ *H1d* can be partially supported for low internet and high social status groups since access and confidence mediated the relationship between gender and future internet use, but resources did not.

Using the digital divide model to compare future use between teenagers with high and low social status functioned better (AIC=94) than using it to compare teenagers with different internet statuses (AIC=107).

4.5 Summary and discussion

The aim of this chapter was to understand whether macro approaches to digital exclusion can explain internet use in a satisfactory matter or whether other frameworks need to be incorporated to examine the processes that take place in different vulnerable groups.

The chapter started by exploring descriptively the variables that make up the digital divide framework as presented in Chapters 2 and 3. Socio-demographics, resources,

home access and confidence were used as explanatory variables, and quantity of use, and breadth of use at home, at school and in the future were used as dependent variables to test the hypotheses underlying this macro framework. After a section that described the differences in these factors by gender, ethnicity, ability and sexuality, path analyses were conducted to test the causal assumptions underlying the traditional digital divide model. The main digital divide hypothesis to be tested in this chapter was that there is no direct link between social status (based on socio-demographics) and internet use but that this relationship is mediated by resources, access and skills.

In what follows a short descriptive summary is given of the relationship between socio-demographics, resources, access, and internet use. This descriptive summary is followed by a discussion of the digital divide models and the associated hypotheses and questions.

4.5.1 Social exclusion, resources and internet use

The descriptives gave an indication about whether and when social status matters in relation to internet use. These findings were used to address five questions which asked whether girls, ethnic minorities, disabled and lesbian and gay (LGB) teenagers were disadvantaged in terms of resources (Q4.2), access (Q4.3), internet confidence (Q4.4), quantity of internet use (Q4.5) and breadth of internet use (Q4.6).

Gender

On all the explanatory variables with the exception of resources the girls showed a disadvantage in comparison to the boys. The girls had less access at home and lower confidence levels in their internet skills than the boys. They were also disadvantaged in quantity of use of the internet, breadth of use at home and school and breadth of future use. These differences were most apparent in uses that were related to enter- or infotainment, that is the girls used the internet less for these activities than the boys.

Ethnicity

Ethnicity mattered for resources, access, confidence, quantity of internet use, and breadth of home use. The Asian teenagers were the most advantaged, on a par with the White teenagers for all variables except educational resources, and the African Caribbean teenagers were the least advantaged. The only exception to the latter was

that the African Caribbean teenagers used the internet more for leisure activities. The path model suggested that the macro model behind use was unable to capture the nature of this relationship between ethnicity and school use since this difference was not explained by any of the mediating variables in the digital divide framework.

These findings confirmed that in general the Asian and White teenagers can be considered of high, and the African Caribbean teenagers of low, internet status (with the exception of leisure school use). Therefore the idea that low internet status is a function of social status is supported for the African Caribbean but not the Asian group which was socially excluded but, based on these findings, digitally included.

Ability

Disability mattered mainly in terms of access and confidence. The disabled teenagers considered themselves to be less skilled than the non-disabled teenagers and had less access at home. The path models showed that confidence, access and internet use were linked for quantity of use and for home and future use. Thus this finding could indicate that disability is indirectly related to less internet use in these locations.

Sexuality

The LGB teenagers did not differ in much from their heterosexual peers. The detailed descriptive analysis showed that they used the internet more at internet cafes and in community centres. The only significant difference in breadth of use was that they said they would use the internet more in the future for entertainment purposes. Since sexuality was not linked to resources or confidence, the digital divide framework is unlikely to offer an explanation for this difference.

Analysis of the expectations of future use showed that the divide in use which seems most persistent is the gender divide. The differences between the ethnic groups seemed more likely to subside because, while the African Caribbean teenagers currently used the internet less, their prediction of future use was similar to that of the other ethnic groups.

In summary, the answer to Q4.2 to Q4.6 is that social groups differ in how (dis)advantaged they are in resources, access, confidence and internet use. On internet

related variables (access and confidence) the girls, African Caribbean, and disabled teenagers were disadvantaged, while social exclusion (resources) was pressing for the teenagers from ethnic minorities and the disabled. The LGB teenagers seemed neither digitally nor socially excluded and the African Caribbean and disabled teenagers seemed the most excluded both digitally and socially. The girls, on the other hand, could be considered digitally but not socially excluded and the Asian teens socially but not digitally excluded.

4.5.2 Testing causal assumptions: Are resources and access key?

The descriptives indicated that the ethnic and gender groups differ in the type of use they give to the internet, and the digital divide framework says that the process that underlies these differences is that internet access and confidence, depending on resources, influence use.

The path analyses that were presented in this chapter allow for the testing of five hypotheses related to the digital divide framework. These hypotheses are repeated briefly here and discussed in relation to the findings.

> H1a: Individuals from socially excluded groups have fewer educational and economic resources.

The analyses showed that the African Caribbean teenagers were disadvantaged in both material and educational resources, while the Asian teenagers were disadvantaged in terms of educational resources. There was no difference in resources between other groups. Therefore *H1a* is supported for the differences between the ethnic groups and is not supported for the differences between gender, disability or sexuality.

The second group of hypotheses assumed causal relationships between resources and access and confidence.

> H1b1: Individuals with fewer educational and economic resources have lower levels of access to the internet and lower skill levels in using the internet.
>
> H1b2: Individuals with a lower quality of access to the internet have lower skill levels.

H1b1 can be supported for the relationship between material, but not educational, resources and home access. However, there is no support for a relationship between

resources and internet confidence. *H1b2* can be supported for home access and all three types of confidence (i.e. technical, interaction and self-efficacy).

The fourth hypothesis assumed a relationship between confidence in internet skills and internet use.

> H1c: Individuals with lower skill and access levels use the internet in a less extensive manner.

H1c can be supported for quantity of use, home use and future use. At home confidence[41] was related to all (infotainment, leisure and general interest) uses and, for future use, confidence was related to entertainment and information uses, and home access mainly to information uses. At school confidence and access were not related to internet use.

The final hypotheses formulated the way in which the explanatory variables mediated the effect of social status (i.e. socio-demographics) on internet use according to the digital divide model.

> H1d: The relationship between social exclusion and internet use is mediated by resources, access and skills.

H1d can be supported for some groups in some conditions. While the causal model could be used to explain the differences between the low internet and social status (African Caribbean) and the high internet status (Asian and White) teenagers, it did not manage to explain fully the differences between groups with different social (the Asian compared with the White teenagers) or internet statuses (the girls vs the boys). These differences between social and digital exclusion are further explored in the rest of this section.

Internet status

The path analyses showed that there was a direct negative relationship between gender and entertainment types of internet use that was not mediated by *resources* or *access*. This indicates that the gender gap will persist even if there is equality in access and resources. One exception was that the girls said they had less access at

[41] Confidence was used as a proxy measure for skill.

home which specifically diminished the quantity of their use and their male future use (pornography and sports) of the internet.

The relationship between gender, breadth and quantity of internet use was in most cases strongly mediated by *internet confidence*. The girls' lower levels of confidence were directly related to less broad uses of the internet.

The existence of an additional direct link between gender and use not mediated by resources, access or confidence suggests that other processes that cannot be measured by the macro variables in the digital divide model are important to explain the differences between the genders in internet use.

Social status

When the Asian and White teenagers were compared, the disadvantage in educational resources of the low social status Asian teenagers was only related to lower information future uses and lower infotainment, leisure and general interest use at home. Contrary to expectations, this lower level of educational resources was also related to teenagers spending a bigger proportion of their time on the internet. Their lack of educational resources did not directly relate to school use or other (entertainment and male) future uses.

Furthermore, since for the teenagers of differing social statuses educational resources were not directly or indirectly related to access and confidence, support for the causal explanation underlying H1d and the digital divide model is weak for this comparison.

Social and internet status

The African Caribbean teens had less educational and material resources, and the disadvantage in material resources was negatively associated with access and internet confidence, which subsequently related to less frequent and narrower use at *home* and in the *future*. The path models for comparisons based on internet and social status further showed that, even if the teenagers differed in resources, access and confidence, this had no impact on their internet use at *school*. However, they did for reasons unexplained by the digital divide model use the internet more for leisure purposes at school.

Therefore H1d can be supported for this low internet and social status group in non-school contexts.

Formulating these findings in terms of digital and/or social exclusion, the digital divide model was particularly useful in explaining the differences between ethnic groups that were of low internet status and those that were of high internet status. The model worked less well in comparisons that compared groups of low and high social status with the same internet status. For gender comparisons, that is comparisons between high and low internet status, the digital divide model seemed to be the least appropriate.

4.6 Conclusion

The results of the analyses presented in this chapter corroborate earlier research that showed that the gap in access to the internet between the genders is closing (see also Cole 2004; Dutton & DiGenarro 2005). However, on closer inspection, this has not led to a closing gender gap in the types of use that teenagers give to the internet. There are still considerable differences between boys and girls that cannot be explained by a difference in educational and material resources or access. A strong link was found between gender and the confidence that these teenagers have in their online skills. This difference in confidence explained a large part of the differences in use between the boys and the girls, thereby giving evidence for the suggestion that internet use depends on more than resources and access and is related to the perception that girls and others have of their own skills (Durndell & Haag 2002; Eastin and LaRose 2000; Harris 1999; Wajcman 2002; Yang & Lester 2003). These results therefore contradict the basic assumption of the digital divide framework that once people have access to the internet and have used it, which all participants in this project have, they will start using it to the same extent.

Previous research (Jung, Qiu, and Kim, 2001; e-Envoy 2004; ONS 2004; see also Ofcom 2006a-d) showed continuing differences in resources and access to the internet between different ethnic groups and disabled and non-disabled teens. This research therefore confirms the existence of these differences. The answer to Q4.7 (p.134) is

that the assumptions underlying the digital divide model are more appropriate to explain the differences between the ethnic and ability groups than between the gender or sexuality groups. Further analyses showed that the model is useful in explaining quantity of use (Q4.8), internet use at home (Q4.9), and predictions of future use (Q4.10), but could not explain why groups with different social and internet statuses differ in their school use (Q4.11).

Based on these findings, interventions that focus on providing universal access could be a solution to close gaps that were based on resources such as was the case for ethnicity in relation to quantity of use, and use at home and in the future. On the other hand, universal access might not resolve any differences between boys and girls (see also Foley, Alfonso, & Ghani 2002, Selwyn 2005b, 2006). However, other factors on a micro- or a meso-level could be responsible for the effect of resources. The direct unmediated link between educational resources and uses, and the strong direct association between confidence and use, might both point in that direction. Therefore different models need to be tested to be certain that access is important in determining use and to test that there are no other intervening or underlying variables that can explain this relationship.

In conclusion, the finding that additional direct paths between resources and use and socio-demographics and use significantly increased model fit suggest that the digital divide model in its purest causal form could not explain the processes behind internet use. In the introduction to this chapter it was argued that, if these paths turned out to be significant, than meso-level variables such as social identification could offer an explanation as mediating variables between these macro-level variables and micro-level variables such as confidence and access. An explanation for the direct effect of resources on use could also be that there are intermediating micro-level variables that might explain this effect. Other frameworks are thus needed to explain why certain groups who do not differ in resources and access use the internet in different ways.

Therefore the answer to the theoretical question (Q4.1) posed at the beginning of this chapter is that the macro approaches only partly explain internet use by teenagers from vulnerable groups. The macro digital divide framework seems most appropriate to explain the differences between groups with lower internet and social status and

those with higher internet status, compared to frameworks based on differences in social status. A different model was needed to explain the differences in use between boys and girls, since resources and access did not significantly mediate the relationship between gender and internet use.

The next chapter, Chapter 5, will investigate the explanatory power of micro-level models that incorporate agency and immediate context of use as the most important predictors for internet use. These models emphasise (personal) internet status where digital divide models emphasised social status based on socio-demographics. In Chapter 6 meso-level models based on stereotypes and social identification, which incorporate digital and social exclusion as separate but related concepts, will be examined.

5 Confidence, needs, and anonymity: Micro-level approaches to internet use

The previous chapter showed that macro models offered only a partial explanation of why the teenagers differed in their internet use. This chapter examines the explanatory value of micro models because in previous analyses there were indications through, for example, the importance of confidence that this might be a useful approach.

The general theoretical question to be answered in this chapter is therefore:
Q5.1 *Can micro approaches explain differences in internet use by teenagers?*

The organisation of this chapter is similar to that of Chapter 4. The first section starts by revisiting the hypotheses and models proposed by micro-level Uses and Gratifications (U&G) and Computer Mediated Communication (CMC) frameworks. These models are combined into one model that uses individuality and agency as its starting point. The second section describes the measures used to test the applicability of this micro model to internet use. In the third, descriptive, section individuals with different individual characteristics (i.e. confidence, perceptions of the internet, and contexts of use) are compared in terms of their internet use, followed by a short description of how these characteristics are related to socio-demographics. Since the focus of micro models is on agency as a driving factor in internet use, group membership is assumed to be of less importance and only discussed in a descriptive manner. In the fourth section of this chapter the emphasis is on testing the explanatory value of the combined elements of both U&G and CMC models through path modelling. Only one model is tested for each location of use (home, school and future) since differences based on social group membership (i.e. socio-demographics) are not assumed to be influential in these micro models. The chapter ends with a discussion of the findings and conclusions are drawn about their theoretical implications.

5.1 Hypotheses and models

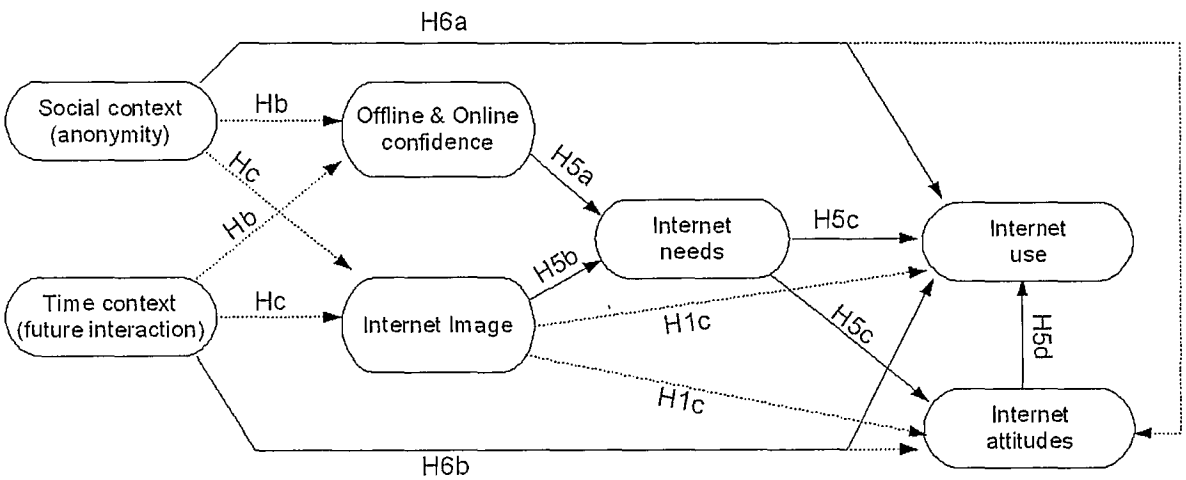
Both CMC and U&G models assume that an individual makes decisions about using the internet based on personal circumstances, which are either the context they find themselves in (CMC) or the perceptions they have of themselves and the internet

(U&G). In Chapter 3 the models that underlie these causal assumptions were depicted (see Figure 3.5, p.86, and Figure 3.6, p.87).

The question addressed in this section is: Q5.2 *How can the U&G and CMC models be combined into one micro model that might explain internet use?*

The U&G and CMC models can be combined in many ways but, following the assumptions underlying the model presented in Figure 3.7, context factors can be hypothesised to pre-empt confidence, media image and internet needs factors as shown in Figure 5.1.

Figure 5.1 Micro-level model combining U&G and CMC approaches



Note I. Dashed lines indicate paths that were not hypothesised within either the CMC or U&G model, but were hypothesised to exist based on Figure 3.7.
Note II. Context, confidence, image, needs and attitudes are composite measures and are described in section 5.2.

Usually the decision to go with a specific model is based on theory but, since in this case there is a lack of theory about the relationship between context, self-confidence, media image and attitudes, there is no theoretical justification in presenting the model in this exact way. A pitfall of using path models is that there are always a number of equivalent models that can explain the data just as well as the one presented in Figure 5.1. For example, confident teenagers might seek less (or more) anonymous environments to use the internet. This would put confidence before anonymity in the model. Since teenagers probably have little control over their environments and

because this corresponds to Figure 3.7 the sequence of events as presented in Figure 5.1 is assumed to be the most appropriate.

The U&G framework is often interpreted as a psychological or agentic approach to predicting media use. It assumes that there are different types of media use and that the way in which different media are used depends on the intentions and the decision making processes within individuals, independent of their social background. This is reflected in H5a to H5d in Figure 5.1.

While macro frameworks emphasise social status based on socio-demographics as a cause of internet use, micro-level frameworks emphasise the person's evaluation of internet status as the main determinant of internet use. CMC frameworks suggest that context influences people's internet behaviour choices. H6a and H6b (p.87) propose that higher levels of anonymity and a lower likelihood of future interaction will cause the person to interpret the internet as a realm where traditional behavioural norms in the interaction with others are less relevant (see section 3.1.6 and Figure 5.1). To be able to test the relationships between context and online behaviour that does not involve the interaction of individuals, H6a and H6b need to be adapted slightly.

The *alternative H6a* was phrased as: Those who use the internet in environments that are more anonymous undertake online activities that are less desirable according to social norms.
Alternative H6b was: The longer the interaction with others online or, the more likely it is that this interaction will continue in the future, the more likely it is that the user will do things online that are socially desirable.

Based on Figure 3.7 two additional hypotheses were posed (dotted lines in Figure 5.1). In Figure 3.7 the effect of context is mediated by meso-level factors such as stereotypes and group identity awareness. Therefore, if the two additional paths are significant contributors to the explanatory value of the model, these meso-level factors are important to consider in understanding internet use. The hypotheses in relation to these paths were formulated in section 3.1.7 under Hb and Hc (p.92).

In addition, based on the digital divide model, direct links between confidence and internet use could be assumed, hypothesising that those who are less confident use the internet less (H1c).

Since attitudes are considered an outcome variable by U&G frameworks the same relationship was hypothesised between confidence and attitudes. However, to make the results comparable with those of the other chapters, internet use was presumed to be the outcome variable.

5.2 Measures and basic descriptives

In this section the measures that were used to construct the micro model presented in Figure 5.1 are described. The behavioural items (i.e. internet use) were the same as those described in section 4.2.5. The remaining measures are described in the order in which they appear in the model and descriptives are given for the items that are incorporated in the composite measures.

5.2.1 Social context: Anonymity

There were several ways in which social context was measured. Anonymity, the most frequently used context variable in CMC research, was measured in the following three ways: *physical anonymity offline* (whether others are usually present when they use the internet), *social offline anonymity* (whether they talk about their internet use with others), and *online anonymity* (whether they give out information about themselves on the internet).

Physical offline anonymity

Table 5.1 shows that the home was a more anonymous internet use environment than the school; 89% mostly used the internet at home alone, while 50% mostly did so at school.

Table 5.1 Physical offline anonymity: Home and school use with others (Q36 & Q37)

I use the internet at home		I use the internet at school	
By myself	89%	By myself	50%
With friends	2%	With friends	42%
With sibling	6%	With sibling	1%
With mother	0%	With teacher and friends	4%
With father	1%	With teacher	0%

Base: All participants who use the internet at home (N=500) or at school (N=694). Data weighted by ethnicity and gender.

Physical home and school anonymity were significantly but not strongly related (r=.10, p=.01) and therefore it was decided to use them as separate dichotomous indicators of *anonymity at home* and *anonymity at school* both with two possible scores: anonymous (uses alone) and identifiable (uses with others).

Social offline anonymity

On average the teenagers who participated in this survey were more likely to discuss what they did on the internet with friends (Q33 av=3.25) than with siblings (Q34 av=2.75) or parents (Q35 av=2.49). So, while their internet behaviour was anonymous to a certain degree, this was especially true in relation to anonymity from family and less so from peers. The three items correlated highly with each other (r=.30 to.51, p< .01) and a social anonymity scale (alpha=.70) was constructed by averaging the scores on the three questions; the scale ranged from 1 to 5, from very identifiable (always talks about their internet use) to very anonymous (never talks about their internet use).

Online anonymity

The most common form of *online anonymity* was having a nickname (Q62: 80%). A high number of the teenagers (Q54: 78%) said they had refused to give out personal information. This should be contrasted with the finding that 65% of this same group of teenagers gave out personal information (Q52). Falsifying information (Q56: 58%) and pretending to be someone else (Q59: 25%) were less common.

A third anonymity scale was created out of the sum of the four anonymity items, minus the giving out of personal information item, which resulted in a scale from -1 to 4. On this scale -1 meant identifiable (i.e. they have given out personal information, but never refused to give out or changed the personal information they gave out online)

and 4 meant highly anonymous (they used all of the four anonymity tactics, and did not give out personal information).

5.2.2 Time context

The measure of time context was slightly changed from its original conception in CMC frameworks; instead of measuring the expectations of a specific interaction with others online the survey measured the time the person had already spent online and the expectation of an increase or decrease of that time in the future.

Three items were combined to form the *probability of future interaction* scale: proportion of time spent on the internet (Q7), frequency of current use (Q14) and the frequency of future use (Q50) item (see section 4.2.5 for measures of time spent online and frequency of current use). The frequency of future use scale ran from 1 to 5 and the majority (63%) thought they would use the internet more in a year's time.

All three items (frequency, proportion and future frequency) were combined in *a probability of future use* scale which consisted of a multiplication of the scores on these items. In theory the combined possibility of future use scale should go from 0 to 40 but, since those who entered 0 minutes of current internet use in the proportion scale (less than 1% of participants) would then have no use in the future, they were given a score of 1 minute of current use.

5.2.3 Perception of self: Offline confidence

One of the U&G framework assumptions is that the perception people have of themselves influences their choices in relation to media use. Education and media literacy studies have showed that one of the factors that influences media use is self-confidence both on the internet and in the offline world (Bandura 1996, 2003; Livingstone & Helsper in press). In section 4.2.4 the measure for online confidence was discussed; this section describes the offline confidence measure used for micro-level analyses.

A factor analysis of the offline confidence items in the survey (see Table 5.2) revealed two types of offline confidence: *individuality* which related to the teenager feeling

special and different, and *pride* which indicated that the teenager was satisfied and proud of what they had achieved without necessarily feeling different.

Table 5.2 Factor analysis: Offline confidence (Q66)

	Individuality	Pride
I have got what it takes to make it in this world	0.69	0.30
I feel good about myself	0.65	0.46
I can do most things just as well as others	0.69	0.33
I feel like a failure		-0.86
I am different from other people	0.34	
I am generally satisfied about myself	0.46	0.49
I have nothing to be proud of		-0.72
I see myself as someone with individual characteristics	0.52	
Alpha=	0.79	0.84

Note I. Base is all participants (N=650). Only loadings >.30 are indicated. Data weighted on ethnicity and gender.
Note II. These two factors were highly correlated (r=.86).

Since on the internet *offline confidence* and *online confidence* are important (Livingstone & Helsper in press) a composite confidence measure was created, based on the sum of the online confidence items (section 4.2.4) and the offline confidence items as discussed in this section. In the path analyses the combined scale with an alpha of .71 was used, while for descriptives (this chapter) and linear regression analyses (Chapter 7) the distinction between offline and online confidences was maintained.

5.2.4 Perception of the medium: Image

The question about media image (i.e. the perception of the functionality of the medium) common in U&G research was phrased as 'what is the medium good at providing?'

Table 5.3 Factor analysis: Internet image (Q32)

	Engagement	Information and services	Leisure and entertainment
Entertainment			0.32
General information		0.37	0.39
Services		0.55	
Commercial activities	0.41	0.53	
Information about events		0.49	0.30
Pass time			0.33
Exchanging ideas	0.56		0.35
Creating communities	0.62		
Information about rights	0.44	0.56	
Communicating with people		0.31	0.38
Education		0.36	0.40
Information about health		0.53	
Making friends	0.53		
Platform for self-expression	0.68		
Alpha=	0.78	0.80	0.65

Note. Base is all participants (N=714). Only loadings >.30 are indicated. Data weighted on ethnicity and gender.

The three factors found in the factor analysis (see Table 5.3) suggest that the internet was seen by the teenagers as a medium that provides three separate functions or images; engagement with others and issues, information provision, and entertainment activities. Three scales were created based on the sum of the items on each individual scale.

5.2.5 Internet needs

Media needs or gratifications sought are another of the building blocks of U&G theory and notoriously difficult to measure; often media use is adopted as an indicator of needs, assuming that what a person does with a medium indicates what a person wants to do with the medium. This is circular reasoning and does not solve the measurement issue because needs are assumed to determine but not be the equivalent of uses.

In this thesis an attempt was made to separate needs from uses or gratifications obtained by asking what the internet was important for in the daily lives of the participants (i.e. gratifications sought or needs) and what it was used for (i.e. gratifications obtained or uses). Although this does not completely solve the circular reasoning problem, it should make it possible to investigate whether those things that teenagers think they need the internet for determine the uses they give to the internet.

The types of needs grouped in a similar manner to the types of images found earlier as is demonstrated in Table 5.4.

Table 5.4 Needs sought from the internet (Q30)

	Engagement	Information and services	Leisure and entertainment
Entertainment			0.76
Services		0.52	0.45
Commercial activities		0.37	0.39
Exchanging ideas	0.57		
Pass time			0.66
Communicating			0.61
Making new friends	0.76		
Part of community	0.82		
Expressing yourself	0.73		
Education		0.54	0.38
Information about rights	0.39	0.72	
Information about events		0.62	
Information about health		0.70	
Alpha=	0.83	0.85	0.82

Note. Base is all participants (N=714). Only loadings >.30 are indicated. Data weighted on ethnicity and gender.

Again alphas were high enough to justify the use of separate scales based on the average score on the items of each individual scale.[42]

5.2.6 Internet attitudes

In the survey seven items measured the evaluation of the internet through agreement with individual statements and one item asked for an evaluation of the overall effect of the internet (see Table 5.5). Evaluations are thus operationalised as general attitudes towards the internet.

[42] The average score was used instead of the sum since all the items used a 5 point scale and averaging the scores makes the individual scales comparable.

Table 5.5 Types of internet attitudes (Q39 & Q40)

The internet is...	A life enhancer	Awe inspiring	Frustrating
Overall effect internet?	0.50		
The internet enhances standard of living	0.59		
The internet makes life easier	0.57		
The internet is efficient for gaining information		0.47	
The internet is addictive		0.62	
There are unthought-of possibilities for the internet		0.43	
The complexity of the internet is intimidating			0.59
The internet is frustrating			0.50
Alpha=	0.57	0.60	0.42

Note. Base is all participants (N=714). Only loadings >.30 are indicated. Data weighted by ethnicity and gender.

An exploratory factor analysis (see Table 5.5) indicated that three types of attitudes existed towards the internet. They can be described roughly as the internet is a life enhancer, the internet is awe inspiring and the internet is frustrating. These three types were used for the descriptive analyses.

The average attitude towards the internet scale had an alpha of .61[43] and a scale was created based on the sum of all the attitude items (frustrating scale item scores were reversed) where a score of 35 signified an extremely positive attitude and 7 an extremely negative attitude towards the internet.

5.3 Descriptives

The micro models assume that the main determinants of internet use are individual level factors. This descriptives section gives a first indication of individual differences in internet use and the applicability of micro-level frameworks to explaining internet use. It starts with the correlations between personal characteristics and internet use.

Notwithstanding their micro focus, U&G studies occasionally compare groups in an ad hoc fashion. Conclusions are subsequently drawn about which groups are more likely to have certain personal characteristics, perceptions of a medium or different needs. These frameworks do not explain why these differences occur at a group level since they place less importance on social status. To be able to draw conclusions later

[43] The item the internet is addictive is excluded from this scale since the reliability dropped to .41 when this item was included.

in this thesis about the relationship between macro and micro factors, a brief summary of the differences between groups is given in section 5.3.2.

5.3.1 Correlations between personal characteristics and internet use

This section addresses the following empirical question:

Q5.3 *Do teenagers with different levels of confidence, different internet images and different internet use contexts use the internet in different ways?*

All the micro model variables were measured at least at an ordinal level and therefore the descriptives in this section are correlation based and describe general relationships instead of mean differences, as was the case in Chapter 4.

Table 5.6 Correlations between micro-level variables and internet use

		Home use			School use			Future use		
		General interest	Infotainment	Leisure	General interest	Infotainment	Leisure	Entertainment	Information	Male
Social context (Anonymity)	Social	0.15**	0.15**	0.17**	0.02	0.06	-0.03	0.05	0.18**	0.07
	Online	0.06	0.07	0.07	0.10*	0.00	0.06	0.12**	0.07	0.10*
	Home	0.03	0.09*	0.06	-0.07	0.01	-0.06	0.08*	0.03	0.08*
	School	0.03	-0.02	0.04	-0.02	-0.13**	-0.03	-0.09*	-0.04	-0.08*
Time context Likelihood of future interaction		0.19**	0.21**	0.16**	-0.02	-0.01	-0.04	0.08	0.07	0.07
Online confidence	Technical skills	0.18**	0.30**	0.22**	-0.09	0.05	-0.09	0.19**	0.12**	0.14**
	Interaction skills	0.20**	0.15**	0.16**	-0.01	0.04	-0.03	0.24**	0.13**	0.03
	Comparative self-efficacy	0.10*	0.25**	0.13**	0.06	0.08	0.12*	0.13**	0.02	0.16**
Offline confidence	Individuality	0.05	0.09	0.08	0.02	0.05	-0.02	0.09	0.06	0.05
	Pride	0.06	0.12*	0.11*	-0.02	0.07	-0.02	0.11*	0.04	0.02
Internet image	Engagement	0.16**	0.09	0.15**	0.17**	0.10*	0.18**	0.15**	0.35**	0.13**
	Information	0.24**	0.17**	0.27**	0.15**	0.12*	0.13**	0.16**	0.42**	0.10*
	Leisure	0.21**	0.21**	0.24**	0.11*	0.17**	0.16**	0.25**	0.36**	0.10*
Internet needs	Information	0.20**	0.00	0.13**	0.14**	-0.02	0.02	0.02	0.22**	-0.13**
	Engagement	0.14**	0.03	0.07	0.17**	-0.02	0.09	0.04	0.16**	-0.09
	Leisure	0.15**	0.06	0.14**	0.04	0.00	-0.01	0.12**	0.17**	-0.07
Internet attitudes	Life enhancing	0.11*	0.14**	0.13**	0.04	0.07	0.06	0.20**	0.18**	0.09
	Awe inspiring	0.17**	0.15**	0.19**	0.07	0.05	0.09	0.11*	0.15**	0.00
	Not frustrating	0.01	0.11*	-0.01	-0.09	-0.01	-0.08	0.09*	-0.01	0.05

Base: All participants N=680 (weighted by ethnicity and gender).
* Correlation significant, $p<.05$.
** Correlation significant, $p<.01$.

Table 5.6 shows that in general[44]:

- Anonymity is positively related to use at home, at school, and in the future. An exception is school anonymity which is related to less broad school and male future use[45].
- A higher likelihood of future interaction with the internet is related to broader home internet use.
- On- and offline confidence are related to broader home and future use.
- An image of the internet as being useful for a wide variety of purposes (engagement, information and leisure) correlates positively to internet use.
- Higher internet information, engagement and leisure needs relate to broader internet use, with the exception of high male future use which is related to lower internet information needs.
- Positive attitudes towards internet use are related to broader home and future use.

Thus these descriptions show that teenagers with different personal characteristics differ in the ways in which they use the internet. The general tendency is that those who perceive themselves to be of higher status, that is those with more confidence, more likely future use, more clearly defined internet images and needs and those with more positive attitudes, use the internet more broadly in different locations.

5.3.2 Socio-demographics and micro-level indicators

This section reports the differences between the socio-demographic groups in context of use, confidence, internet images and needs, and attitudes.

Context

This section addresses the following empirical question:

Q5.4 *Do teenagers from different social groups have different contexts of use?*

[44] These are general patterns observed in the correlations. Since most of the teenagers participating in the survey belonged to vulnerable groups these descriptives cannot be generalised to the general teenage population.

[45] Broad use refers to a greater number of activities undertaken on the different use scales, thus a higher score on these scales.

Table 5.7 Context by gender, ethnicity, ability and sexuality

	Social anonymity	Online anonymity	Home anonymity	School anonymity	Time context
Boys	3.18	1.59	0.94**	0.52	4.87
Girls	3.14	1.68	0.85**	0.51	4.38
Asian	3.16	1.58	0.90*	0.48	5.07
White	3.13	1.66	0.94*	0.51	4.58
African Caribbean	3.27	1.46	0.84*	0.56	4.57
Other/Mixed	3.08	1.83	0.91*	0.50	3.81
Disabled	3.21	1.46	0.92	0.39	3.49
Not disabled	3.15	1.65	0.90	0.51	4.67
LGB	3.18	1.72	0.89	0.62*	3.85
Heterosexual	3.17	1.62	0.91	0.49*	4.64
Total	3.16	1.64	1.10	1.49	4.87

Note: Base all participants who answered these questions (N=690). Averages weighted by ethnicity and gender.
** Differences significant at p<.01.
* Differences significant at p<.05.

Table 5.7 shows that:

- The girls had less anonymity at home than the boys, but there were no further context differences.
- The White teenagers had the highest levels of anonymity at home, followed by the Asian teenagers and then by the African Caribbean teenagers who had the lowest levels of home anonymity. There were no further context differences.
- The disabled and non-disabled teenagers did not differ significantly in levels of anonymity.
- The LGB teenagers had more anonymity at school than the non-LGB teenagers. They did not differ on other context variables.

Confidence

Q5.5 *Do teenagers from different social groups have different levels of offline confidence?*

Table 5.8 Offline confidence by gender, ethnicity, ability and sexuality

	Individuality	Pride
Boys	3.97	3.99
Girls	3.96	3.96
Asian	3.88*	3.93
White	4.03*	4.08
African Caribbean	4.07*	4.05
Other/Mixed	3.90*	3.90
Disabled	3.50**	3.42**
Not disabled	4.01**	4.04**
LGB	3.92	3.71**
Heterosexual	4.01	4.03**
Total	3.99	4.02

Note. Averages weighted by ethnicity and gender (N=690).
** Differences significant at p<.01.
* Differences significant at p<.05.

Table 5.8 shows that:

- The girls and boys did not differ in their levels of offline confidence (in contrast to online technical confidence which was lower in the girls, see section 4.3.3)
- The Asian teenagers were less individually confident than the other ethnic groups (in contrast to online technical confidence which was highest in this group and lowest in the African Caribbean group).
- The disabled teenagers were less confident offline (and online) than the non-disabled teenagers.
- The LGB teenagers were less proud offline than the non-LGB teenagers (in contrast to online confidence where there were no significant differences).

Images and needs

Q5.6 *Do teenagers from different social groups have different perceptions of, and needs in relation to, the internet?*

Table 5.9 Image and needs by gender, ethnicity, ability and sexuality

	Image of the internet			Internet needs		
	Engagement	Information	Leisure	Information	Engagement	Leisure
Boys	2.02	4.63	4.25	3.21**	2.70	3.43**
Girls	1.77	4.68	4.21	3.53**	2.84	3.63**
Asian	1.95	5.00**	4.50**	3.45*	2.86**	3.68*
White	1.88	4.79**	4.21**	3.22*	2.57**	3.45*
African Caribbean	1.85	4.21**	3.95**	3.42*	2.84**	3.50*
Other/Mixed	1.96	4.78**	4.49**	3.35*	2.73**	3.53*
Disabled	1.61	4.02*	3.87	3.09*	2.85	3.31
Not disabled	1.94	4.79*	4.31	3.38*	2.74	3.56
LGB	2.09	4.46	4.15	3.52	3.12**	3.67
Heterosexual	1.87	4.73	4.28	3.36	2.70**	3.54
Total	2.02	4.63	4.25	3.21	2.70	3.43

Note. Averages weighted by ethnicity and gender (N=690).
** Differences significant at p<.01.
* Differences significant at p<.05.

Table 5.9 shows that:

- The girls and boys did not differ in the image they had of the internet, but the girls needed it less for information and leisure purposes.
- The Asian teenagers had the strongest image of the internet as an information and leisure medium, the White teenagers believed less strongly that the internet was appropriate for these activities and the African Caribbean teenagers had the lowest expectations in relation to these functions. The Asian and African Caribbean teenagers depended more on the internet for information, engagement and leisure activities than the White teenagers.
- The disabled teenagers had a less strong image of the internet in terms of information provision and needed it less for these purposes than the non-disabled teenagers.
- The LGB teenagers depended more on the internet for engagement purposes than the non-LGB teenagers but had the same image of the internet.

Attitudes

Q5.7 *Do teenagers from different social groups have different attitudes towards the internet?*

Table 5.10 Attitudes by gender, ethnicity, ability and sexuality

	Attitudes: Internet is...		
	a life enhancer	awe inspiring	not frustrating[46]
Boys	3.66	3.79*	3.81**
Girls	3.69	3.93*	3.59**
Asian	3.76	3.96	3.79*
White	3.72	3.79	3.80*
African Caribbean	3.59	3.86	3.67*
Other/Mixed	3.63	3.90	3.52*
Disabled	3.51	3.48**	3.43*
Not disabled	3.67	3.88**	3.73*
LGB	3.62	3.86	3.51*
Heterosexual	3.69	3.87	3.72*
Total	3.67	3.86	3.70

Note. Averages weighted by ethnicity and gender (N=690).
** Differences significant at p<.01.
* Differences significant at p<.05.

Table 5.10 shows that:

- The girls had different attitudes towards the internet from the boys, they found it more awe inspiring and more frustrating.
- The Asian and White teenagers were more positive about the internet than the African Caribbean teenagers who found it more frustrating. There were no differences on the other (positively formulated) attitudes between ethnic groups.
- The disabled teenagers had less positive attitudes towards the internet than the non-disabled teenagers, they found the internet less awe inspiring and more frustrating.
- The LGB teenagers found the internet more frustrating than the non-LGB teenagers but did not differ on the other attitudes.

5.4 Findings: Testing the causal sequence in micro-level models

In this section the micro model is tested for home, school and future use and the findings are discussed in relation to the hypotheses as posed by CMC and U&G frameworks.

[46] The items on this scale were reverse coded in the analysis so that all attitude scales had low scores where there were negative attitudes towards the internet and high scores where there were positive attitudes.

5.4.1 Home use

The micro-level frameworks do not distinguish between different levels of social status and focus instead on different individual or internet statuses as the predictors of different types of internet use. In this and subsequent sections in this chapter only one micro model will be tested for every location for different types of individuals.

The question to be answered in this section is:

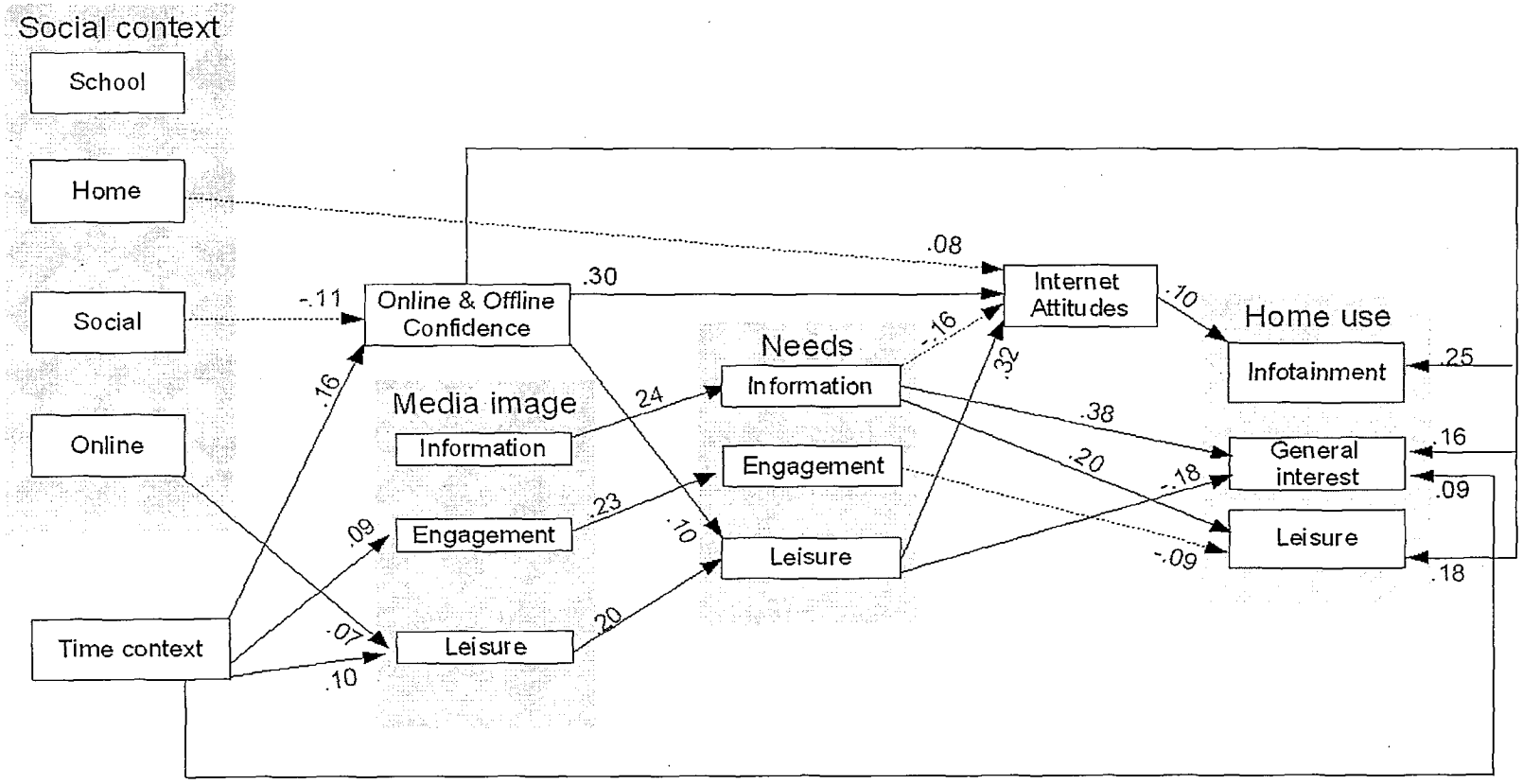
Q5.8 *Can a micro model explain internet use at home by individuals with different personal characteristics?*

A first step in these analyses was to fit the model with only those paths that were based on the CMC and U&G model (continuous lines in Figure 5.1). This model had a relatively good fit for home use ($\chi 2(95)=307.65$ p=.00; NC=3.24; RMSEA= 0.07 (c.i.= .06-.08); CFI=.91; AIC=421.65). However, it was significantly improved by adding the paths implied in the general model presented in Figure 3.7 (dotted lines in Figure 5.1) [47]. Figure 5.2 shows the model with additional paths which fitted on all statistical indicators for complex models.[48] An overview of the variables presented in this model can be found on the inserted variable card.

[47] The model with the feedback loop between attitudes and use cannot be calculated because it would make the model unstable and use and attitudes were measured simultaneously and not sequentially so a decision had to be made about the causal sequence. To facilitate comparison with other analyses in Chapters 4 and 6 use became the outcome variable.

[48] NC≤3, RMSEA ≤.5 and CFI≥.90 good fit, NC≤5 and RMSEA ≤.8 reasonable fit (Kline 2005, see also Bollen 1989).

Figure 5.2 Path model: Home use based on micro model[49]



Base: All teenagers who have used the internet at home (N=500). Other ethnicity teenagers were excluded from analyses to make comparisons between models in subsequent chapters possible.

Note I: $\chi 2(88)=199.83$, p=.00; NC=2.27; RMSEA= 0.05 (c.i.= .04-.06); CFI=.95; AIC=327.83.

Note II: Dashed lines indicate paths with a $0.1< p <.05$. Insignificant paths are fixed to zero and not depicted.

[49] All coefficients presented in this chapter are standardised. See Appendix VII for coefficients and covariances.

This model explained between 6 and 10% of the variance in teenagers' internet use at home (infotainment R^2smc=.09, leisure R^2smc=.06 and general interest R^2smc=.10).[50]

Support for U&G and CMC frameworks

The path coefficients in Figure 5.2 allow for the following observations in relation to the hypotheses based on the CMC[51] and U&G[52] models:

⇒ *H5a* is supported since different types of users had different needs. Those who were more confident[53] tended to look more for leisure type activities on the internet.

⇒ *H5b* can also be supported; the different perceptions of what media should be used for were all significantly related to having different needs in relation to the internet. Those who thought the internet was good at information provision also had higher information needs, and similarly for engagement and leisure images and needs.

⇒ *H5c* cannot be supported. Those teenagers who had an engagement image of the internet and subsequently had high engagement needs did not use the internet more for any activities, in fact they used it less often for leisure uses. For information oriented teenagers there was no relationship between images, needs and infotainment use, nor was there a relationship between leisure orientation and leisure use. Those with higher leisure needs and images were less likely to use it for general interest purposes, while those with higher information needs and images were more likely to use the internet at home for general interest (and leisure) purposes.

⇒ *H5d* can be partially supported, because a more positive attitude towards the internet was directly related to an increase in infotainment use at home. Attitudes mediated the relationship between needs and infotainment use the more the teenager perceived the internet to be a medium for leisure activities, and the

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[50] The equivalent model that uses attitudes as the outcome variable which is mediated by use as the U&G framework originally suggested is a slightly better fit $\chi 2(88)=197.62$, p=.00; NC=2.25; RMSEA= 0.05 (c.i.=.04-.06); CFI=.95; AIC=325.62. However, only information uses influenced attitudes in a significant and positive way (β=.12). Variation in attitudes was explained well by the model in Figure 5.2 (R^2smc=.16).

[51] See section 3.1.6, p.85.

[52] See section 3.1.5, p.83.

[53] Confidence is measured by a composite variable (one scale) of offline and online confidence (see variable card and section 5.3.2.2).

higher their need for leisure activities, the more positive their evaluation of the internet was which, in turn, was related to higher infotainment use at home. H5d cannot be supported for either information or engagement needs and images. Engagement needs were not related to attitudes and information needs were negatively related to attitudes resulting in a negative effect on infotainment use.

⇒ Since there was no direct significant relationship between anonymity and use, *H6a* cannot be supported. The total effects show that social anonymity was indirectly, and negatively related to all uses (infotainment βtot=-.06, general interest βtot=-.04, leisure βtot=-.04) and to attitudes (βtot=-.21) through the mediating effect of confidence. Those who talked less about what they did online were less confident and these lower levels of confidence were negatively associated with attitudes towards the internet.

⇒ Since there was a direct relationship between the possibility of future interaction and general interest use, *H6b* can be supported. Future interaction was related positively to use (infotainment βtot=.01, general interest βtot=.06, leisure βtot=.02, and attitudes βtot=.07).

As explained at the beginning of this chapter (section 5.1) a number of paths that fall outside the original CMC and U&G models were tested to be able to draw conclusions about the limitations of this micro model (see Figure 5.1). These added paths are based on the digital divide framework (H1c, p.78) and meso-level frameworks (Hb and Hc, p.92). If these paths are significant, explanations outside the scope of this micro model, such as those posed by the digital divide and SIDE frameworks, must be incorporated into understandings of internet use.

Support for the digital divide framework

⇒ Since there was a significant direct relationship between confidence and internet use at home, *H1c* can be supported. The more confident teenagers used the internet for a broader range of activities. Thus the digital divide framework's assumptions remain valuable in explaining internet use even when other micro factors are considered.

The positive relationship between confidence and infotainment was reinforced by the positive direct relationship between confidence and attitudes. Those with higher confidence had more positive attitudes towards the internet and therefore used the internet more for infotainment purposes at home. The total effect of confidence on the different uses (infotainment β=0.28, general interest β=0.14 and leisure β=0.18) was large in comparison to the total effects of other variables on use at home.

Support for adding the meso-level variables and untheorised relationships

$\Rightarrow$ Since context was directly related to confidence, *Hb* can be supported.

$\Rightarrow$ Since context was directly related to media images, *Hc* can be supported.

Those who talked more to others about their internet use (i.e. had less *offline anonymity*) and those who perceived it more likely that they would interact over the internet in the future tended to be more confident. The teenagers with more *online anonymity* and a higher likelihood of future interaction also had stronger developed images of the internet as being good at providing leisure and engagement activities.

These findings can be explained either by the unmeasured mediating effects of social identification or meso-level variables, or by the existence of a direct relationship that has not been theorised. The next chapters will test the first assumption by inserting stereotyping and social identity variables into the model and thus examining whether a different approach to the relationship between context and confidence and media images is necessary. The second assumption about a direct relationship between context and use is tested by controlling for other possible explanations in these same chapters.

In summary, micro frameworks in general were able to explain processes behind internet use at home for teenagers with different personal characteristics such as different levels of confidence and different media images. While the model explained the processes well, that is they were a good fit to the data based on RMSEA and CFI measures, the variance explained (R^2) of individual uses was rather low. This suggests that the implied causal relationship between social context, confidence, internet images, needs and attitudes is modelled well, but that other variables or paths need to be added to the model to increase the explanatory value for individual uses.

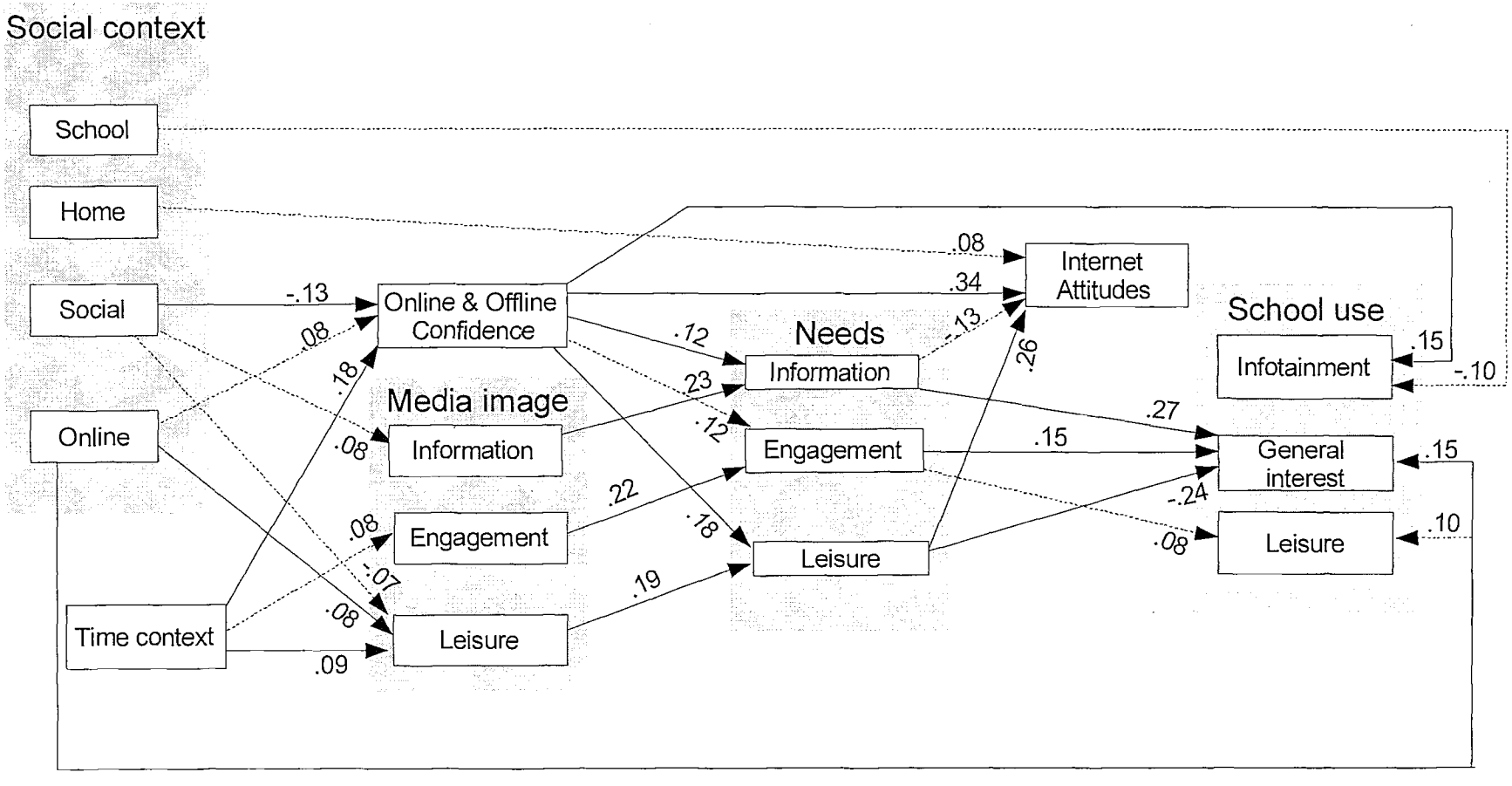
The findings show that different types of anonymity had different effects on confidence, image and attitudes and therefore indirectly caused variations in internet use. This finding, the direct relationships between confidence and use without the mediation by needs (H1c) and the relationships between anonymity and confidence (Hb), suggest that other models need to be integrated into the micro models to come to a more satisfactory explanation.

5.4.2 School use

The question addressed in this section is:
Q5.9 *Can a micro model explain internet use at school by individuals with different personal characteristics?*

The micro model without added paths (see Figure 5.1) had reasonable fit for school use ($\chi 2(94)=327.25$ p=.00; NC=3.48; RMSEA= 0.07 (c.i.=.06-.07); CFI=.90; AIC=443.25). The model in which the additional paths were added significantly improved model fit (see Figure 5.3) on all indicators.

Figure 5.3 Path model: School use based on level model



Base: Asian, White and African Caribbean participants (N=500).
Note I. $\chi 2(83)=180.93$, p=.00; NC=2.18; RMSEA= 0.05 (c.i.= .04-.05); CFI=.96; AIC=318.93.
Note II. Dashed lines indicate paths with a $0.1< p <.05$. Insignificant paths are not indicated in the model and coefficients are fixed to zero.

This model explained the three types of use at school (infotainment R^2smc=.03, leisure R^2smc=.02 and general interest R^2smc=.08) to a lesser extent than home uses.

Support for U&G and CMC frameworks

Nevertheless, more support was found for the individual hypotheses (see Figure 5.1).

⇒ *H5a* can be supported, since users with more online and offline confidence had higher information, engagement and leisure needs (for use at home confidence was only related to needing the internet for leisure purposes).

⇒ *H5b* can be supported, since internet images and needs were related.

⇒ Support for *H5c* is strongest for engagement, since engagement images are related to engagement needs and general interest (i.e. engagement) uses, but only partial support was found for the other needs and images. The teenagers with more needs in relation to the internet tended to use the internet more at school, although leisure needs were negatively associated with general interest use. Engagement needs were related positively to general interest uses whereas these were not related at home. Information needs were related only to general interest uses and not to leisure use as they were at home.

⇒ *H5d* cannot be supported, because attitudes were not significantly related to use at school.[54] Needs were related to attitudes and to use directly, but the relationship between needs and uses at school was not mediated by attitudes as it was for home use.

⇒ Since there was a direct significant relationship between school and online anonymity and internet use, *H6a* can be supported. Those teenagers who used the internet at school without anyone present (i.e. more anonymous) were less likely to use the internet for infotainment purposes, while those who knew how to protect their personal information online were more likely to undertake leisure and general interest uses. This relationship between context and use was not as expected, that is more anonymity did not lead to more undesirable uses but instead to more desirable uses.

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[54] Nor did uses at school predict attitudes when the equivalent model was tested with attitudes as the outcome variables (χ2(83)=180.93, p=.00; NC=2.18; RMSEA= 0.05 (c.i.=.04-.05); CFI=.96; AIC=318.93).

⇒ Since there was no relationship between time context and use, *H6b* cannot be supported for school use.

Support for the digital divide framework

⇒ There was a significant relationship between confidence and infotainment use at school, but this relationship was negative instead of positive; therefore *H1c* cannot be supported for school use.

Support for adding meso-level variables and untheorised relationships

⇒ There was stronger support for *Hb* and *Hc* for school use than there was for home use.

Time context was related, as for home use, to both confidence and images. Social anonymity was related, not only to confidence which supports *Hb,* but also positively to information and negatively to leisure images which in turn supports *Hc*. Those who talked less to others offline saw the internet less as a medium for information and leisure uses than those who talked to others about their use. Online anonymity was in this case related to leisure images in support of *Hd.*

In summary, anonymity was one of the most important micro-level explanatory variables in relation to school use, through its direct (positive and negative) effect and through its indirect effect mediated by confidence, media images and needs. These relationships were probably an important contributor to the significant fit of the models (based on RMSEA and CFI) to the explanation of processes behind school use. The unique micro-level factor needs was also directly linked to school use. This again suggests that the micro model makes a contribution to explanations of the processes behind school use even though the variables in the model did not explain the levels of variances (R^2) in individual uses to a great extent.

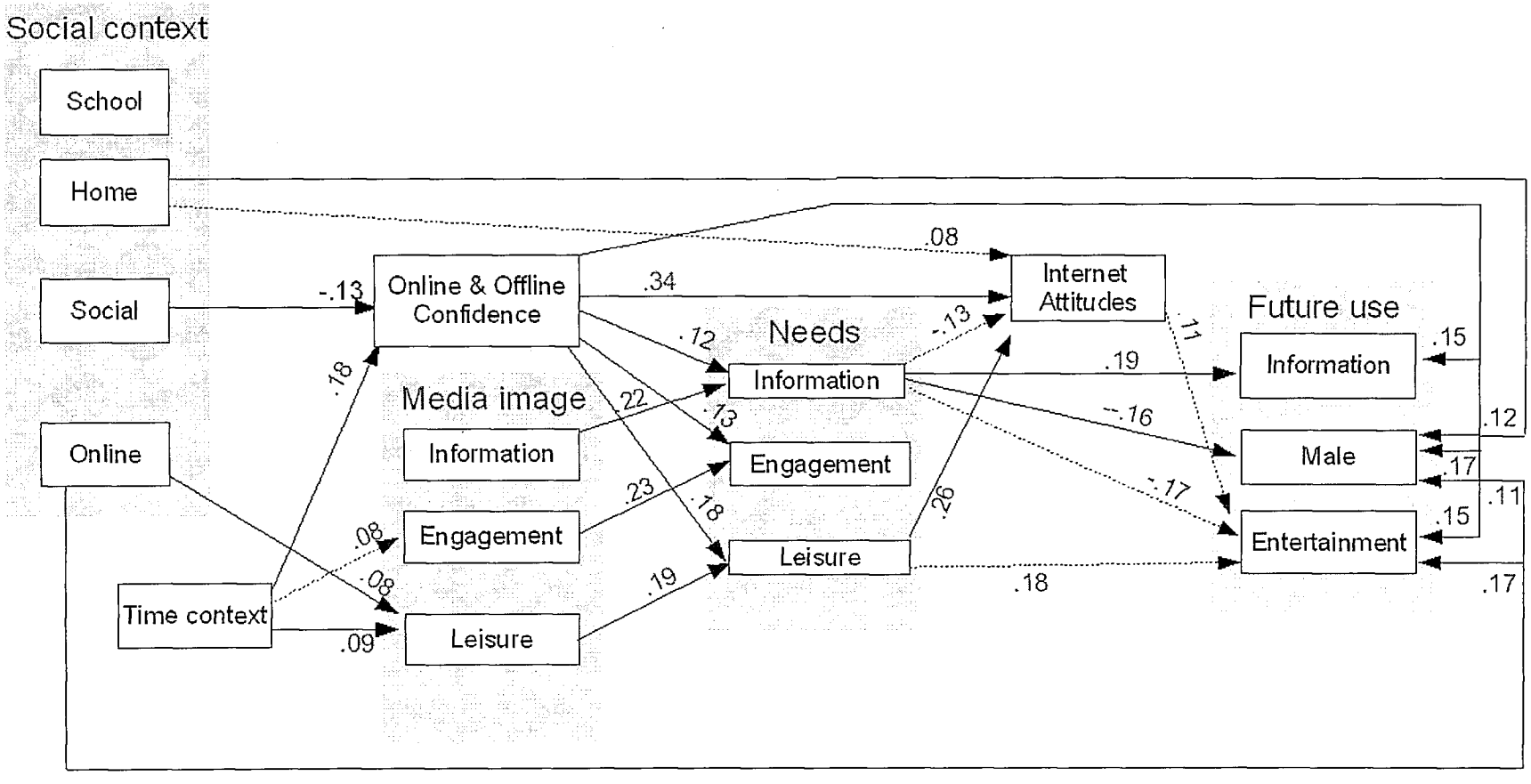
5.4.3 Future use

The question addressed in this section is:

Q5.10 *Can a micro model explain intentions of future internet use by individuals with different personal characteristics?*

The unadjusted micro model (see continuous lines in Figure 5.1) did not fit for future use ($\chi 2(91)=405.21$ p=.00; NC=4.45; RMSEA= 0.08 (c.i.=.07-.09); CFI=.87; AIC=527.21). The model in which the additional paths based on Figure 3.7 are added had a significantly improved fit but it did not fit as well on the various indicators as the models for home and school use (see Figure 5.4).

Figure 5.4 Path model: Future use based on micro models



Base: all participants (N=731).
Note I. $\chi 2(83)=267.89$, p=.00; NC=3.23; RMSEA= 0.06 (c.i.= .05-.07); CFI=.92; AIC=405.89.
Note II. Dashed lines indicate paths with a $0.1 < p < .05$. Insignificant paths and paths assumed to be zero are not indicated in the model.

This model was relatively good at explaining the three types of uses the teenagers planned to undertake in the next six months (information R^2smc=.07, male R^2smc=.07, entertainment R^2smc=.09). Similar patterns to those for home and school use appeared, although individual coefficients were slightly different.

Support for U&G and CMC frameworks

In relation to the individual hypotheses the following can be said:

⇒ Since those with more confidence had more needs involving the internet and images related to higher corresponding needs, *H5a* and *H5b* can be supported in the same manner as they were supported for school use.

⇒ *H5c* can be supported in the case of information and leisure needs. An image of the internet as an information medium was related to high information needs, and those subsequently to higher information use in the future, and similarly for leisure needs. Additionally, higher information needs were related to lower male uses and entertainment uses of the internet in the future.

⇒ *H5d* can be supported for a leisure type of user, since leisure images had higher leisure needs which were related to more positive attitudes towards the internet and more positive attitudes were positively associated with use for leisure activities. H5d cannot be completely supported for information oriented persons, since images were strongly related to corresponding needs and uses but to less positive attitudes.[55] H5d also cannot be supported for those who were engagement oriented since there was no relation between engagement needs and uses.

⇒ *H6a* can be supported for future internet use. Home anonymity was directly related to higher male use and online anonymity to both male and entertainment future use. A more anonymous context was therefore directly associated with what might be called undesirable uses.

⇒ Since there was no significant direct relationship between the possibility of future interaction and internet use, *H6b* cannot be supported.

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[55] In the model that had attitudes as the outcome variable ($\chi 2(84)=269.92$, p=.00; NC=3.21; RMSEA= 0.06 (c.i.=.05-.07); CFI=.92; AIC=405.92) this is shown since only entertainment uses had a positive effect on attitudes.

Support for the digital divide framework

⇒ Since there was a direct positive relationship between confidence and future information, entertainment, and male activities, *H1c* and the validity of the digital divide framework can be supported.

Support for adding meso-level variables and untheorised relationships

⇒ In support of *Hc* and *Hd*, the additional relationships as implied in Figure 3.7 were again significant although to a lesser extent than at school.

There was a negative relationship between social anonymity and time context and confidence which supports *Hc*. There was also a positive direct relationship between time context and media images in support of *Hd*.

In summary, the micro model significantly explains processes behind future internet use for those teens with different confidence levels and for those with different orientations towards the internet. Context is also directly associated with the choices these teenagers make in relation to future use, which supports the application of micro-level frameworks to explanations of future internet use. Caution needs to be applied for future use since, while the model fit was significant and thus the processes behind use could be understood through this model, the explained variance of individual future uses was low, and thus more variables or paths have to be considered when trying to explain individual uses instead of the processes behind use (see Chapter 7 for these analyses).

Equivalent models

It is fully possible, and would be more logical following the micro argument which focuses on agency, that confidence determines whether the teenager seeks an anonymous context and whether they will seek the possibility of using the internet more in the future. A model with confidence variables preceding both anonymity and time variables is not truly an equivalent model to the ones presented earlier, because the time and anonymity variables were exogenous and become endogenous variables if the model is changed. There were no major changes to the coefficients when this model was tested and, as expected, the fit was not significantly different; the

relationship between confidence, anonymity and probability of interaction was present in the same manner as it was in the models where context explained confidence.[56]

Since the model presented in Figure 3.7 was taken as a basis for the construction of the micro model, a direct path between context and needs was not included. This was related to the assumption based on U&G theory that confidence and image are at the beginning of the causal chain, and thus logically mediate the relationship between contexts and needs when CMC and U&G frameworks are merged sequentially. However, there is no theoretical reason why context should not directly influence needs, as well as confidence and image, other than this new hypothesis based on the combination of two previously unrelated theoretical models. To test the hypotheses that U&G and CMC frameworks could be combined at a number of levels and not just at the first stage of context, confidence and image, direct paths between contexts and needs were added and this significantly improved the fit of the micro models. Table 5.11 shows the fit of the model when this path was added.

Table 5.11 Fit of micro models with connection between context and needs

		R^2smc	AIC	NC	CFI	RMSEA
Home	Infotainment	0.09	297.94 (df=82)	1.93	0.97	.04 c.i.=.03-.05
	Leisure	0.06				
	General interest	0.10				
School	Infotainment	0.03	289.03 (df=78)	1.81	0.97	.04 c.i.=.03-.05
	Leisure	0.02				
	General interest	0.08				
Future	Information	0.07	227.81 (df=78)	2.92	0.94	.06 c.i.=.05-.07
	Entertainment	0.09				
	Male	0.08				

In this adjusted model social anonymity was negatively related to all internet needs, home anonymity was negatively related to both information and engagement needs, and the possibility of future interaction was positively related to engagement needs. All other relationships remained the same when these paths were added. This shows that there was a direct effect of context on what people need the internet for independent of the person's confidence and internet image. Those with less anonymous context and a

[56] Similarly a model which used attitudes as the outcome variable had an equal fit and paths did not differ significantly.

greater likelihood of future interaction with the internet were more dependent on the internet.

5.5 Summary and discussion

Since in the previous chapter macro models were found only partially to explain internet use, this chapter tested the value of micro approaches to differences in internet use. The hypotheses related to Uses and Gratifications (U&G) and Computer Mediated Communications (CMC) approaches were tested through the path modelling of their combined model. In a similar manner to Chapter 4, the processes behind three types of use were analysed for home, school, and future use, this time from a micro perspective instead of a macro perspective. Throughout the chapter the focus was on internet use as an outcome variable and the explanatory variables were anonymity, the probability of future interaction with the internet, confidence, internet image, needs and attitudes. When these micro models were combined they showed a good fit in all locations and seemed to explain the processes behind school use better than macro models.[57]

This summary and discussion contains two parts. The first focuses on the four main micro factors and their relationship to internet use based mainly on the descriptives presented in this chapter. The second discusses the extent to which CMC and U&G and other micro model hypotheses could be supported based on the path analyses.

5.5.1 Comparison of persons with different characteristics

The descriptives gave an indication about whether teenagers with different personal characteristics use the internet in different ways. This section briefly summarises the relationships between these characteristics of the individual and internet use[58] in answer to Q5.3 which asked whether teenagers with different personal characteristics (i.e. contexts, images and needs) used the internet in different ways.

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[57] Good fit of the model does not necessarily mean that the variance explained in individual uses is greater. In fact this was not the case in the comparison between micro and macro models. Thus the causal processes were explained better (due to a link between needs and use) by micro models, but the variables in the macro model explained individual school uses better (ignoring the causal assumptions).

[58] See inserted variable card for an overview of the elements that made up the different measures and a description of the elements that made up the different uses.

Online and offline confidence

The confident teenagers were more dependent on the internet for a broad range of activities, but this was not always reflected in higher use. In general the more (online and offline) confident teenagers did use the internet more broadly at home and said that they would also do so in the future. However, based on the descriptive findings, it is likely that at school comparative online self-efficacy had the largest effect and was related to broader leisure use.

The path analyses showed that mediation by information and leisure needs diminished the effect general confidence[59] had on school and future use, in such a manner that the confident teenagers used the internet less at school for infotainment purposes, and more for general interest and leisure purposes.

Images and needs

The images that the teenagers had of the internet were strongly related to what they needed the internet for, with no distinction between home, school or future use environments. Thus those who had an image of the internet as appropriate for information searching would have higher information needs in relation to this medium.

Since image and needs categories were similar, only relationships between equal images and needs were tested. Needs categories, however, did not correspond directly to use categories and therefore needs were related to all uses. A further argument for linking needs with all uses was that higher entertainment needs could lead to diminished engagement uses since priority would be given to entertainment related uses. The latter coincided with the findings from the path analyses. Although the general tendency was that images were related to similar needs and to more use, there were a number of exceptions: information needs were related to less male and entertainment use in the future, leisure needs to less general interest use at home and at school, and engagement needs to less use at home but more at school. Engagement needs were in most environments the weakest predictors of use; hence the distinction

[59] The measure for confidence used in the path analyses was a composite variable based on the sum of all online and offline confidence measures (see variable card).

between more or less information and leisure orientated teenagers is more useful in understanding internet use than a distinction based on engagement.

There is no theoretical explanation for these mixed findings and traditional measurement problems in relation to needs might be a partial explanation. Another explanation is that the environment limits the extent to which needs can be translated into use in ways that cannot be captured or understood with the data collected by this survey.

Attitudes

Those teenagers who were more positive towards the internet, that is those who thought the internet was a life enhancer, awe inspiring and not frustrating, in general used the internet in a broader way at home and in the future. However, these attitudes were not related to internet use at school. The path analyses demonstrated that the strongest relationship was with entertainment type uses and supported the lack of influence of attitudes in a school context. The path analyses also showed that attitudes and confidence were strongly related. The more confident teenagers had more positive attitudes and used the internet in the broadest way possible in all locations; therefore the relationship between attitudes and non-entertainment related uses could be spurious and caused by confidence instead of differences in opinion.

Context: Anonymity and Future interaction

The personal context of the teenagers was shown to be influential in association with use, but the extent of its association differed in different locations. In general, the teenagers with more anonymous internet use contexts, with the exception of school anonymity, used the internet more broadly. However, the path analyses showed that the correlations masked more complex underlying processes and that some of these relationships could be spurious and caused by other factors. This section will detail these complex relationships between context, confidence, image, needs and use.

Social anonymity was related to home use and to information future use in the correlations, but the path models showed that this relationship was mediated by confidence and needs. Those teenagers who talked more about their internet use (i.e. those who were less anonymous) were more confident and, because of this high

confidence, used the internet more broadly. The more anonymous the teenager was the less they needed it for engagement, leisure or information activities.

Online anonymity was related to a leisure orientation towards the internet and this mediation led to a more narrow general interest use of the internet at home and at school and broader entertainment use in the future. However, there was also a direct relationship between being more anonymous online and using the internet more broadly at school for general interest and leisure activities, and in the future for male and entertainment purposes. The end result was that online anonymity was related to a broader use of the internet at school and in the future for entertainment and hobby related (general interest and leisure) activities, but was not significantly related to home use.

The relationship between *home anonymity* and internet use was mediated by attitudes. In all locations those teenagers who had no one looking over their shoulder at home were more positive towards the internet. This was positively associated with entertainment related home and future uses. Since there was no relationship between attitudes and use at school home anonymity did not influence school use.

School anonymity had a clear effect on school use, but unexpectedly decreased less desirable uses at school. Those who had no one looking over their shoulder used the internet at school less for infotainment purposes. Based on the correlations, these same teenagers were less likely to use it for entertainment and male related activities in the future. The path analyses suggest that the latter is a spurious relationship caused by a correlation between school and online anonymity, since no direct or indirect link between school anonymity and future use was found.

Time context had a more consistent straightforward effect on internet use. The teenagers who planned to return to the internet had a better defined image of the internet and were more confident, and therefore tended to use the internet more. However, there were also, as would be expected under CMC frameworks, direct positive effects of expectations of future interactions on internet use at home.

The answer to Q5.3 based on the correlations presented in this chapter is that the teenagers with higher personal statuses, that is those who are confident on- or offline, have stronger internet images and needs, and have more positive attitudes towards the internet, tend to use the internet more broadly in most locations. However, the path analyses suggested that there might be relationships that cannot be understood by merely looking at correlations. In this case path analyses offer a better insight into the micro processes behind use because they test mediation as well as direct relationships.

5.5.2 Testing causal assumptions: Are agency and context important?

The U&G framework predicts that the personal characteristics of individuals will influence what they seek from the internet and that this will then influence the use of and the attitudes towards this medium (Flanagin & Metzger 2001; Cummings & Kraut 2002). CMC frameworks assume that this decision about the use of, and attitudes towards, a medium are based on an assessment of the immediate context (Joinson 2001; Walther 1994, 1996; Walther, Anderson et al. 1994). In micro frameworks the effects of both personal characteristics and context are not influenced by external broader social structures.

Q5.2 asked how U&G and CMC frameworks could be integrated to explain the processes behind internet use. The answer offered in this chapter is that in a combined micro model the effect of confidence and internet images can be assumed to be mediated by needs as hypothesised in U&G frameworks by H5a to H5d and context can be assumed to have a direct effect on use and attitudes as hypothesised in H6a and H6d in CMC frameworks. When the two frameworks were combined based on the theory underlying Figure 3.7, a number of relationships that were not hypothesised by either CMC or U&G frameworks appeared essential to understanding internet use. These paths were added and were twofold in nature: the first, based on the digital divide framework assumptions, directly linked confidence and uses and attitudes towards the internet; the second, based on social identification or meso-level frameworks, connected context (anonymity and probability of future interaction) to image and confidence. The argument was that, if these paths were found to be significant, macro- or meso-level explanations are required to understand internet use since the causal relationships as implied by U&G and CMC frameworks would in that case not be sufficient to explain internet use.

Hypothesis testing

In this chapter CMC and U&G frameworks were combined and tested through path analysis. This section repeats the hypotheses underlying this model and tests them based on the findings.

H5a: Users with different perceptions of themselves seek different gratifications from the internet, that is they have different internet needs.

Since those teenagers who were more confident had more leisure, engagement, and information needs, *H5a* can be supported. This support was limited to leisure needs for those teenagers who used the internet at home.

H5b: Varying perceptions of what different media should be used for, that is its images, lead to different internet needs.

H5b can be supported in all locations and for the information, engagement and leisure oriented teenagers.

H5c: When needs are in line with the image of the medium, that medium is used in a way that corresponds with these needs and images.

H5c cannot be supported since, although images and needs were aligned, these did not subsequently lead to similar types of uses, and the relationship between needs and use differed according to location (see section 5.5.1.2).

H5d: When the medium gives the user what they sought the evaluations of this medium are positive and the possibility of future use increases.

H5d can be supported for the home and future use contexts, but not for use at school, since in this context attitudes were not associated with use even though attitudes were related to confidence and needs.

H6a: Those who use the internet in environments that are more anonymous undertake online activities that are less desirable according to social norms.

The findings suggest a lack of support for *H6a* and a need to specify locations of use and types of anonymity. The two types of anonymity and context for which *H6a* can be supported are online and home anonymity which were directly related to more

entertainment and male uses in the future. Since increased home and social anonymity also led indirectly to less desirable (entertainment and male) uses at home and in the future, *H6a* can be further supported for these types of anonymity if the constraint of direct association is lifted.

However, school anonymity had the opposite effect at school and decreased instead of increased less desirable uses. In addition online and social anonymity also had negative indirect association with less desirable uses. Both findings suggest a lack of support for *H6a.*

> H6b: The longer the interaction with others online or the more likely it is that this interaction will continue in the future, the more likely it is that the user will do things online that are socially desirable.

Since time context was directly and positively associated with general interest uses at home, *H6b* can be partially supported. However, this relationship was mediated by media images and confidence for school and future use which suggests that the hypothesis is only supported if the constraint of direct association is lifted.

Although many of the hypotheses based on the U&G (H5a-H5d) and CMC (H6a-H6b) frameworks can be at least partially supported, the findings also showed that the causal assumptions underlying the digital divide framework were still valid and added to the explanatory value of the model. For example, there is support for *H1d* (see section 3.1.1) because there was a direct and positive relationship between confidence and internet use unmediated by internet needs, as would have been expected in the U&G framework.

Based on the broad theoretical framework two additional hypotheses were formulated in section 3.1.7:

> Hc: Different social contexts are related to different perceptions of the self.

Hc can be supported since in all contexts those with less socially anonymous contexts and those who expected to return to the internet were more confident (see section 5.4.1.4) and depended more on the internet (see section 5.3.1). An exception was the school context where online anonymity was related to higher instead of lower confidence.

Hd: Different social contexts lead to different images of, and therefore needs from, the internet.

Hd can be supported because anonymity of different kinds and the teenager's expectation of returning to the internet were related to better defined images of the internet. These effects were especially strong on the engagement and leisure orientations of the teenagers and less clear for information orientations.

Explanatory value of micro models in different environments

These micro models and their underlying causal assumptions had different explanatory values for home, school and future use, although the differences were not large. The micro model was the best fit when it was used to explain the processes behind internet use at school (Q5.9) and at home (Q5.8), and the fit for future use (Q5.10) was the lowest.[60] It might therefore be the case that other factors play a role when trying to predict what teenagers will do with the internet in the future. The indicators show how well the causal chain and processes are represented but do not say much about specific uses.

While the model had good fit for school use, only 2% of leisure and 3% of infotainment use was explained by this model. One reason for the low variance explained of these models and the digital divide model for school use might be that there was less variance in school use, while home use was more varied between the teenagers.

In summary, the micro frameworks were able to explain the processes behind internet use, but were not as strong in predicting the level of use in different contexts.

5.6 Conclusions

The fit of the micro models in all locations offers support for an agentic micro approach to internet use as suggested by CMC and U&G frameworks. The micro models were consistent in modelling the relationship between context, confidence, image, and needs that people might have in relation to the internet. However, there

[60] Q5.8 to Q5.10 asked whether micro models could explain internet use at a variety of locations.

was variance in the shape of the model depending on the location and type of measure used and this has certain theoretical implications which will be discussed in this section.

5.6.1 Location of use and agency

This thesis has shown so far that offline and online confidence makes people more dependent on the internet, and that those who have different images of the internet adjust their needs and use accordingly. Similarly, those who are more confident evaluated the internet more positively. This suggests that personal characteristics such as confidence and needs play an important role in determining internet use. The findings support research that concludes that psychological problems might be related to isolation from the online as well as the offline world (Gross, Juvonen & Gable 2002; Sanders, Field, Diego & Kaplan 2000), and contradicts studies that argue that they lead to greater dependence on the internet (see also Papacharissi & Rubin 2000). However, this relationship between personal characteristics and use was not consistent across locations, which suggests that the influence of agency can be limited by the restrictions of broader contexts or social structures. The school environment especially seemed to restrict the impact of confidence although not that of needs.

5.6.2 Anonymity in its different forms

The better fit of micro models to school than to home and future use could be partly attributed to the association between location and anonymity. The CMC framework suggested that anonymity leads to undertaking socially less desirable behaviour or behaviour that complies less with social norms (Dubrovsky 1986; Kiesler & Sproul 1992). However, the findings suggest that the uniform way in which anonymity has been operationalised in CMC research is equivocal. While at home and for future use there was some evidence that anonymity led to less desirable uses, the exact opposite seemed to occur at school. This could be due to the fact that at school peers are more likely to be present, and therefore the presence of others or lack of anonymity stimulates popular in-group behaviour which, amongst teenagers, is likely to be 'typically male' (i.e. sexual material and sports) and entertainment uses. Anonymity at school, in contrast, was related to less 'popular' behaviour such as looking for general interest information. It is therefore important to look at the location, the type of anonymity and the group norms that are involved. Anonymity from peers is different

from anonymity from parents, just like anonymity at home and on the internet has different effects from anonymity at school.

5.6.3 Implications for the theoretical development of this thesis

The perception of the self as an internet user was shown to be important in this chapter and this suggests that personal internet status can serve as a useful theoretical predictor of internet use independent of social status. Similarly the importance of immediate physical context suggests that micro-level models can be useful in understanding individual level behaviour when the researcher has no knowledge of macro-level factors. Notwithstanding the usefulness of the micro models, the descriptives in section 5.3.2 suggest that groups with different social statuses differ systematically on micro-level indicators. They differed specifically in terms of home anonymity, confidence, images, needs and negative attitudes towards the internet. Thus the assumption that macro factors are unrelated to the choices that an internet user makes cannot be supported. Macro and meso social structures are likely to restrict the impact of agency on internet use.

Similarly, the existence of relationships between contexts, confidence and perceptions of the internet suggests that other frameworks could explain internet use through processes that cannot be captured by CMC or U&G theories individually.

An explanation for the direct link between context, confidence and use is that there is a third underlying variable related to both context and confidence. A macro explanation is that those with more resources have higher levels of anonymity at home, and higher confidence levels, because they come from families with more (social) capital. In that case the relationship between anonymity and other variables in the model is spurious, and it might explain why the macro models could fit the data slightly better for home and future use than these micro models. A meso explanation is that stereotypes influence the teenager's self-image (see Haddon 2000; Durieux 2003) depending on the context in which they use the internet, and that stereotypes therefore mediate the relationship between anonymity and confidence and between anonymity and use. The next chapter looks at meso-level models which incorporate the influence of stereotypes and related self-perception and tests this assumption of mediation.

The direct relationship between confidence and use suggests that the digital divide model was initially correct in the assumption of a direct relationship between skills and use (see also Eastin & LaRose 2001, Livingstone et al. 2005b), although what causes this remains uncertain after the analysis presented in this chapter.

The answer to Q5.1 posed at the beginning of this chapter is thus that micro models can partially explain internet use by teenagers in different locations and in particular at school. However, additional frameworks are needed to explain why these micro processes differ according to broader social structures.

6 Social identification and group perceptions: Meso approaches to internet use

In the previous chapters internet use was examined applying macro (Chapter 4) and micro (Chapter 5) frameworks. Although these explained internet use to a certain extent, the findings suggest that some processes could be explained by a third model. Therefore this chapter approaches the data through a model that tests the value of meso approaches. This meso-level model based on social identity and stereotyping approaches incorporates micro and macro variables but emphasises the influence of social group influences.

The theoretical question that this chapter addresses is:
Q6.1 *Can a meso-level model explain internet use by teenagers from vulnerable groups?*

This chapter has the same outline as the previous chapters; after a revision of the hypotheses, it discusses the measures that were used to test the theoretical model. This is followed by a descriptive section which compares groups on meso-level indicators. The final section discusses the findings derived from a path model analysis that tests the meso model for groups of different internet and social statuses. As in previous chapters, the models were tested for home, school and future use. In Chapter 7 the models presented in this and previous chapters will be compared.

6.1 Hypotheses and models

Two frameworks were discussed in Chapter 3 that took a social identity approach to behaviour: Feminist stereotyping (section 3.2 and Figure 3.3) frameworks and Social Identity Theory (SIT) (see section 3.3 and Figure 3.4). These frameworks incorporate variables such as socio-demographics and resources that can be found in the digital divide framework, and variables such as context and confidence that are part of micro-level theory.

The traditional stereotyping approach based on Feminist theory assumes that, besides resources, the perceptions that individuals have of the groups they belong to

(stereotypes) influence their self image (see Figure 3.2) and that this subsequently determines their opinions and how they behave. These assumptions were reflected in H2a to H2c (see section 3.1.2, p.80).

The Social Identification Theory (SIT) approach is similar in its emphasis on social context (anonymity) to the related CMC framework (see section 3.1.6 and Chapter 5) but in addition incorporates a focus on group membership (socio-demographics) and the level of social identification. What is reflected in H3a to H3c is that SIT assumes that group membership only influences behaviour if the teenager is aware of their group, if this social identity is important to them and when stereotypes that exist about group behaviour (group norms) are internalised (see section 3.1.3, p79).

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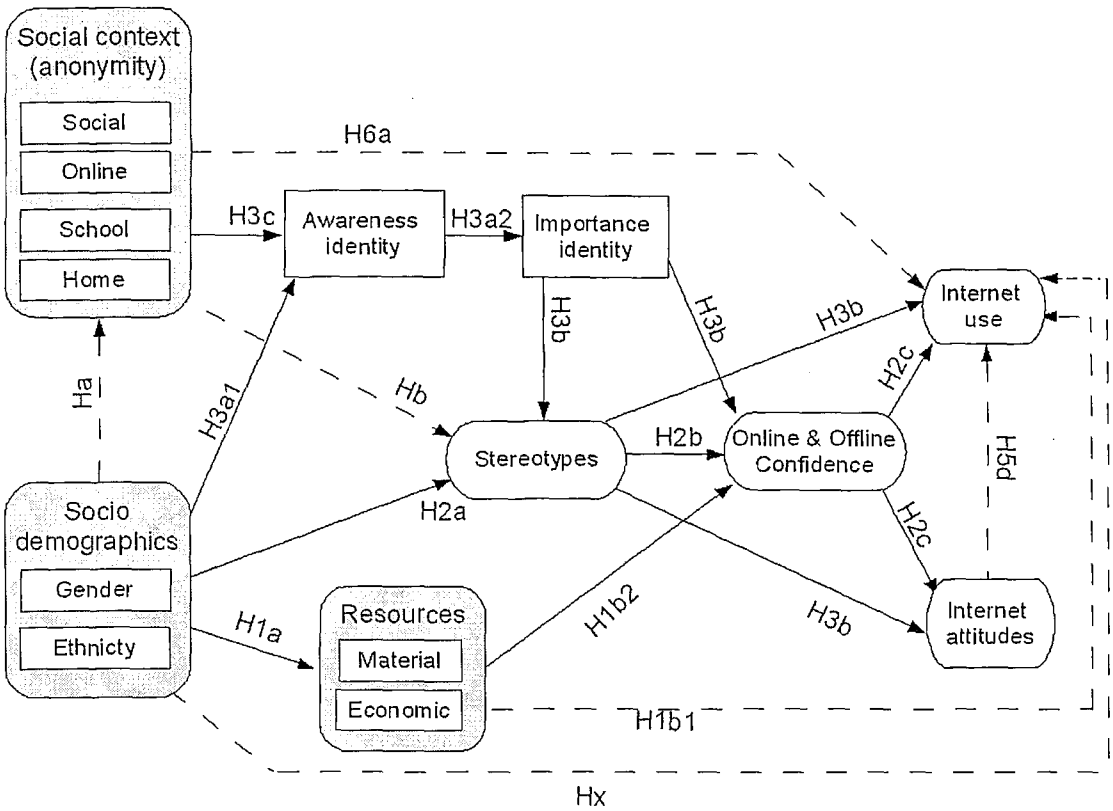
The question asked in this section is:
Q6.2 *How can the Feminist and SIT models be combined into one meso model that might explain internet use?*

The joining of these two frameworks can be done in a number of ways and since they have not been combined before, there is no existing theoretical framework on which to base the new model. The model presented in Figure 6.1 preserves both models in the original sequential order and reflects the theoretical assumptions in Figure 3.7, and was therefore considered the most appropriate.

Figure 6.1 Model incorporating Feminist and social-psychological frameworks



Note I. The dotted lines in this model indicate relationships that are not assumed by either of the theoretical frameworks but could be hypothesised according to Figure 3.7.
Note II. Awareness, importance, stereotypes and confidence are composite measures and described in section 6.2.

As in previous chapters, paths could be hypothesised based on Figure 3.7 that do not form part of either the SIT or the Feminist model (see dotted lines in Figure 6.1). As explained in section 3.1.7, context is an important element of the proposed combined model in Figure 3.7 and therefore the paths added to this model mainly concern context. Other paths could have been added but were not hypothesised based on Figure 3.7. Context as such is not studied within the Feminist framework but, since one of its premises is that resources and environments are unequal for different groups and, because in this model this path connects the Feminist and SIT meso models, there is a hypothetical link between socio-demographics and context (*Ha,* p.92). A direct relationship between the context and the influence of stereotypes independent of awareness or importance of identity (*Hb,* p.92) is not part of any of the frameworks discussed previously, but has been hypothesised to exist based on Figure 3.7. Based on micro and digital divide frameworks, other direct links were added as depicted in Figure 6.1 (H1a-H1b, H6a and H5d). To test for a fourth underlying model a direct

path was added (*Hx,* p.94) between the socio-demographic variables and internet use. If this were found to be significant it might indicate that neither macro nor micro nor meso models completely account for differences in use between social groups.

6.2 Measures and basic descriptives

In this section the measures used to operationalise the elements in the micro model presented in Figure 6.1 are described. The socio-demographics and resources measures are the same as those discussed for the digital divide approach in Chapter 4 and context and attitude measures were already discussed as micro-level theory indicators in Chapter 5. The factors that were not operationalised in previous chapters and will be discussed in this section are stereotypes, awareness and importance of social identity and group confidence. While confidence was measured in previous chapters, the measure had to be adapted to include the idea of self-perception or identification with the group as included in the meso-level model.

6.2.1 Group perceptions or stereotypes

To measure stereotypes or perceptions about the behaviour of different groups two items were included. The first assessed whether the teenagers thought that there was a difference in the importance of the internet for individuals from different groups; the second addressed whether they thought there was a difference in the skills of these groups. Since these group perceptions were probably not based on factual information about the different groups; in this thesis they were labelled stereotypes.

Table 6.1 Importance of the internet for different groups (Q64)

	Average
Elderly	3.20
Gays/lesbians	3.41
Ethnic minorities	3.58
Women	3.60
Disabled	3.67
Young people	3.86

Base. All participants who answered (average N=644). Weighted by ethnicity and gender.
Note. Scale runs from 1 not important at all to 5 very important.

Table 6.1 shows the average scores for the importance stereotypes.[61] A new variable was created from this scale based on out-group versus in-group scores. The average importance for all those groups the teenager did not belong to were averaged, as were the scores on those groups that they did belong to.[62] This resulted in two group perception scales, *out-group and in-group internet importance*, with scores from 1 to 5 (a higher score is a more positive stereotype towards the in- or out-group). The two scales correlated highly (r=.68) indicating that a positive in-group perception is related to a positive out-group perception. To prevent multicolinearity in the path modelling only the in-group importance variable was used.

The second question about group perceptions enquired about the skill levels of different socially excluded groups in comparison to their counterparts and had a non response rate of 22%.

Table 6.2 Perceived level of skill of different groups in comparison to others (Q65)

	Average
Women	3.69
Young people	3.45
Ethnic minorities	3.01
Gays and Lesbians	3.04

Base. All participants who answered (average N=571). Weighted by ethnicity and gender
Note. Scale runs from 1 a lot less skilled than others to 5 much more skilled than others.

Previous studies found that negative stereotypes about women's internet skills prevailed (van Dijk 2005; Eastin & La Rose 2001; Wajcman 2005), but in this study the teenagers considered women more skilled than men (see Table 6.2). These descriptives confirm earlier findings that young people were considered more skilled in comparison to older people. However, ethnic minority and LGB individuals were considered to be just as skilled as majority groups. There is no logical or theoretical explanation for why these stereotypes were found in this study but the comparison between groups in section 6.3 and the path analyses presented in section 6.4 can offer a partial answer.

[61] The non-response rate for the questions was relatively high (av. 12%). If the answers to these questions had converged towards the mean with little variance this would have suggested that the teens had gone for the safe option and not answered the questions truthfully. However, this was not the case.
[62] Since the scales consisted of different items for each individual an alpha cannot be calculated. The correlations between these items ranged from .31 to .37.

Since it is important to get an evaluation of in- and out-group differences and the correlations are not clearly grouped along those lines, the skills stereotypes were kept as individual indicators instead of total scales in both the descriptives section and the path analyses.

6.2.2 General group confidence

A further addition was made to the confidence variable used in Chapter 5 because the meso-frameworks incorporate the perception of the self in relation to the group. For each group (ethnicity, gender, disability and LGB) the teenager was asked to indicate how much they liked being part of the group, whether they would rather be a member of another group, and whether they would prefer that others were not aware of their identity (Q71, Q78, Q81, Q82, Q83 and Q86). A 5 point scale called group self-esteem was created with the average scores over the in-group confidence measures[63]. A higher score signifies higher in-group confidence. For the path analyses a combined scale was created based on the sum of technical and interaction confidence (see section 4.2.4), pride and confident personalities (see section 5.2.3), and group esteem.

6.2.3 Awareness of social identity

For each participant awareness of group membership was measured by asking how often they were aware of being part of the groups they belonged to. Most SIT research measures this by actually manipulating awareness in an experimental situation (Lee 2004; Sassenberg & Postmes 2002; Spears & Lea 1994). This is done in the experiment described in Chapter 8 but manipulation of this sort was not possible through a survey.

Table 6.3 Correlation: Awareness of group memberships (Q71, Q78, Q83 & Q86)

	Ethnicity	Disability	Sexuality	Gender
Disability	0.44*	1.00		
Sexuality	0.31	-1.00**	1.00	
Gender	0.30**	0.34	0.06	1.00

Note I. Results weighted for ethnicity and gender (N=691).
Note II. Correlation for disabled only calculated for those with disability who answered all questions (weighted N=36), and correlations with sexuality items calculated only for those who were LGB and answered all questions (weighted N=59) (Disabled and LGB N=7).

[63] Cronbach's α could not be calculated since for each individual the scale was composed of different items. All items correlated highly between .27 and .75.

The teenagers who were more aware of belonging to an ethnic group were also more aware of being male/female (see Table 6.3, r=.30) These teenagers probably have a sense of belonging to multiple groups and it was rare that they, for example, thought of themselves as only Asian or Woman, they saw themselves as an Asian woman. Awareness of disability shows significant correlations with ethnicity and, negatively, with sexuality. The correlations between ethnicity, disability and gender were particularly large, therefore an awareness scale was created based on the average of the items mentioned above with a score from 1 to 5, where a score of five indicates a high *awareness of social identity* calculated for those groups to which the teenager belongs.[64]

6.2.4 Importance of social identity

The two remaining elements of the meso model are the importance of the group to the person. There was a question for each group the participant might belong to about how important the group was for the teenager (Q70, Q77, Q84 and Q85) and there was a question on the impact that the group had on their daily lives (Q71f, Q78d, Q83d and Q86f) both indicators of the importance of identification with the groups to which the person belongs.

[64] This might be potentially problematic for the LGB disabled teens because the two types of awareness cancel each other out but, since there were only seven of these teenagers, they would not have a great impact on further multivariate analysis. The lack of a correlation between gender and sexuality is more problematic and when comparing gender groups gender awareness instead of total awareness was taken as an indicator.

Table 6.4 Correlation between importance and impact of the internet for different groups (Q70, Q71, Q77, Q78, Q83, Q84, Q85 & Q86)

	Ethnicity importance	Ethnicity impact	Disability importance	Disability impact	Sexuality importance	Sexuality impact	Gender importance
Ethnicity impact	0.50**	1.00					
Disability importance	0.21	0.27	1.00				
Disability impact	0.13	-0.13	0.45**	1.00			
Sexuality importance	-0.05	0.00	-0.03	0.82*	1.00		
Sexuality impact	0.09	0.05	-0.25	0.64	0.46**	1.00	
Gender importance	0.34**	0.25**	0.31	0.20	0.35*	-0.02	1.00
Gender impact	0.32**	0.40**	0.28	0.28	0.51**	0.09	0.44**

Note I. Results weighted for ethnicity and gender (N694).
Note II. Correlation for disabled only calculated for those with disability who answered all questions (weighted N=42), and correlations with sexuality items calculated only for those who were LGB and answered all questions (weighted N=61).

Table 6.4 shows that the importance and impact of ethnicity and gender were strongly correlated and that the same is true for the importance and impact of gender and sexuality. There was also a strong correlation between the impact of disability and the importance of sexuality. This means that the disabled LGB teenagers who participated almost all indicated that both their sexuality and their disability had a great influence on their lives.

The average of all these items was used to create a scale from 1 to 5 on the *importance of social identity.*[65]

6.3 Descriptives

Both SIT and Feminist frameworks assume that lower status leads to a greater prominence of group norms and perceptions. In this section the different groups are compared on the meso-level variables presented in section 6.2.

The broader question to be addressed in this section is:

Q6.3 *Do perceptions of group level characteristics differ between different social groups?*

This descriptives section will compare the different gender, ethnic, ability and sexual orientation groups for the stereotypes and social identity variables which were not discussed in earlier chapters.

6.3.1 Stereotypes

The empirical question for this section is:

Q6.4 *Do girls, ethnic minorities, disabled and LGB teenagers have different stereotypes from boys, White, non-disabled and heterosexual teenagers?*

[65] The scale for the Asian girls included only ethnicity and gender items, that for the disabled LGB White boys only LGB and disabled items, and so forth for the other individuals.

In Table 6.5 the comparison between the different socio-demographic groups is shown for the stereotype variables. Only the group perceptions relevant to the group are presented.

Table 6.5 Means comparison: Stereotypes between groups

	Importance of the internet for …		Skills stereotypes about [66]			
	In-group	Out-group	Women	Ethnic minorities	Young people	LGB
Boys	3.70	3.38	3.49**		3.46	
Girls	3.78	3.50	3.88**		3.45	
Asian	3.75	3.51	3.68	3.06	3.46	
White	3.74	3.43	3.92	2.98	3.26	
African Caribbean	3.78	3.39	3.81	3.04	3.48	
Other/Mixed	3.70	3.46	3.39**	2.92	3.62	
Disabled	3.65	3.60	4.01		3.20	
Not disabled	3.75	3.44	3.68		3.46	
LGB	3.69	3.78**	3.86		3.45	3.20
Heterosexual	3.75	3.41**	3.68		3.46	3.00
Total	3.74	3.45	3.69	3.01	3.45	3.03
N	649	649	570	565	574	563

Note. Averages weighted by ethnicity and gender.
** Differences significant at p<.01.
* Differences significant at p<.05.

[66] A high score on these variables means that young people are considered better at using the internet than older people and so on.

In-group and out-group internet importance

- There were no differences between the girls and boys, ethnic or ability groups in how they evaluated the importance of the internet for their in-group or their out-group (see Table 6.5).
- The *LGB* group had a significantly higher appreciation of the importance of the internet for out-groups (i.e. non-LGB groups) than the heterosexual group, which is contrary to what was found in the exploratory interviews (see section 3.2.1).

Internet skills stereotypes

- The *girls* considered their own group to be more skilled in comparison to how the boys evaluated these groups (see Table 6.5).
- There was a difference in the perception of women's internet skills between the *ethnic groups*. This difference was associated with the scores of the mixed ethnic group who had a lower perception of women's skills than the African Caribbean, Asian and White teenagers.
- There were no differences between the LGB and heterosexual teenagers.

6.3.2 Confidence

The empirical question for this section is:

Q6.5 *Do girls, ethnic minorities, disabled and LGB teenagers have different levels of group confidence in comparison to high status groups?*

Table 6.6 Means comparison: Group confidence

	Group confidence
Boys	4.18*
Girls	4.28*
Asian	4.28
White	4.14
African Caribbean	4.30
Other/Mixed	4.23
Disabled	3.91**
Not disabled	4.27**
LGB	3.77**
Heterosexual	4.32**
Total	4.24

Note. Averages weighted by ethnicity and gender. N=690.
** Differences significant at p<.01.
* Differences significant at p<.05.

Table 6.6 shows that:

- The *girls* tended to be more comfortable with their group than the boys.
- The *ethnic* groups did not differ in how comfortable they were with their group.
- The *disabled* teenagers were less confident about their group than the non-disabled teenagers.
- The *LGB* teenagers felt worse about their group than the heterosexual teenagers.

6.3.3 Social identification

The empirical question for this section is:

Q6.6 *Do girls, ethnic minorities, disabled and LGB teenagers have different levels of awareness and of social identity importance than high status groups?*

Table 6.7 Awareness and importance of group identity by gender, ethnicity, ability and sexuality

	Awareness	Importance group
Male	4.06	3.70
Female	4.01	3.77
Asian	4.19**	3.85**
White	3.80**	3.41**
African Caribbean	4.17**	3.95**
Other/Mixed	4.03**	3.68**
Disabled	3.80	3.57
Not disabled	4.06	3.75
LGB	3.86	3.47**
Heterosexual	4.07	3.76**
Total	4.04	3.73

Note. Base all participants that answered these questions (N=690). Averages weighted by ethnicity and gender.
** Differences significant at p<.01.
* Differences significant at p<.05.

Table 6.7 shows that:

- There were no differences between the *boys* and the *girls* in the importance and awareness of group identity.
- The *White* teenagers were the least aware of their group identity and attached the least importance to their group. The *African Caribbean* teenagers in contrast had high group identity awareness and attached high importance to their group

identity. The *Asian* teenagers were equally aware of their group identity as the African Caribbean teenagers but attached slightly less importance to it.

- The *disabled* teenagers did not differ from non-disabled teenagers in awareness or importance of their group identity.
- The *LGB* teenagers, in comparison to the heterosexual group, indicated that their group identity was less important.

In summary, the gender group of lower internet status, that is the girls, had different perceptions of group level characteristics but this did not translate into a higher awareness or importance of their social identity. The ethnic group of lower social and internet status, the African Caribbean teenagers, held more negative stereotypes about women and their social identity was more central to them. The disabled teenagers who were of low social and internet status differed in group confidence levels but not in other meso-level variables. The low social status LGB teenagers held more positive stereotypes about other groups, felt less good about their in-group and attached less importance to their social identity.

These results do not show consistent effects of either social or internet status. In the next section path analyses were conducted that offered insight into the processes that took place in and between these different groups.

6.4 Findings: Testing the causal sequence in meso-level models

In this section the meso model is tested for home, school and future use and comparisons are made between groups on the basis of their internet status and their social status.

Similar to the procedure followed in Chapter 4, path models marked by (a) in the caption compare groups that are considered of low internet status (the girls and the African Caribbean teenagers) with groups that are of higher internet status (the boys, the Asian and the White teenagers) for each location (i.e. home, school and future). These are immediately followed by path models that take social status as the starting point by comparing the Asian teenagers with the White teenagers (both of high internet status), marked by (b) in the captions. After this presentation of the models

the findings are summarised for each location, discussing the differences in the processes behind internet use for gender and ethnicity groups using the hypothesis derived from Figure 6.1 as a basis.

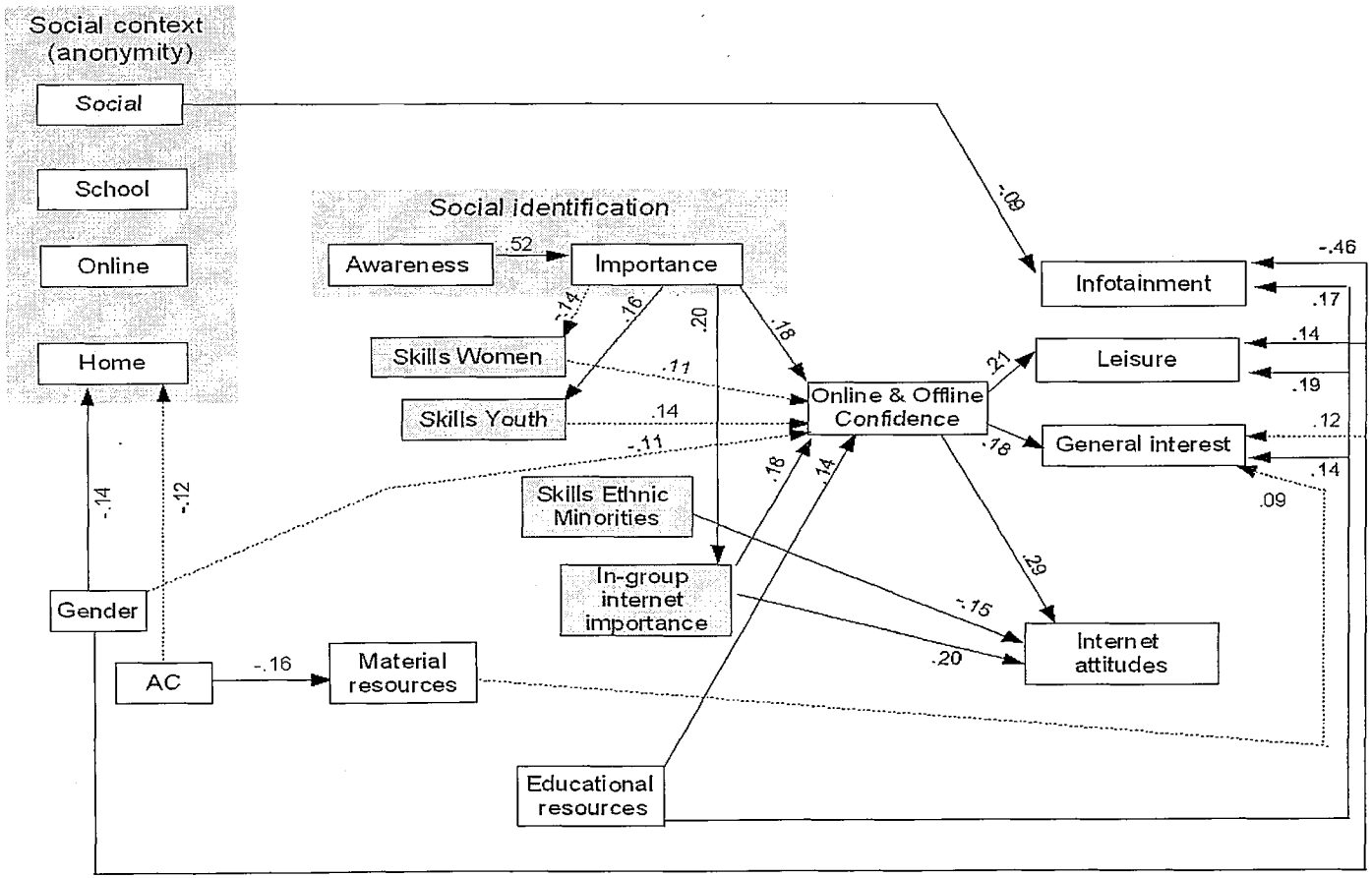
6.4.1 Home use

The question to be answered in this section is: Q6.7 *Do meso-level models contribute to explaining internet use at home by teenagers?*

The model for home use strictly following the group perception frameworks (uninterrupted lines in Figure 6.1) fitted marginally on the complex model indicators (RMSEA and NC) for the internet status[67] and the social status comparison[68]. The home use models based on Figure 6.1 including the additional hypothesised paths was a good fit on all indicators for complex models see Figures 6.2 & 6.3).[69]

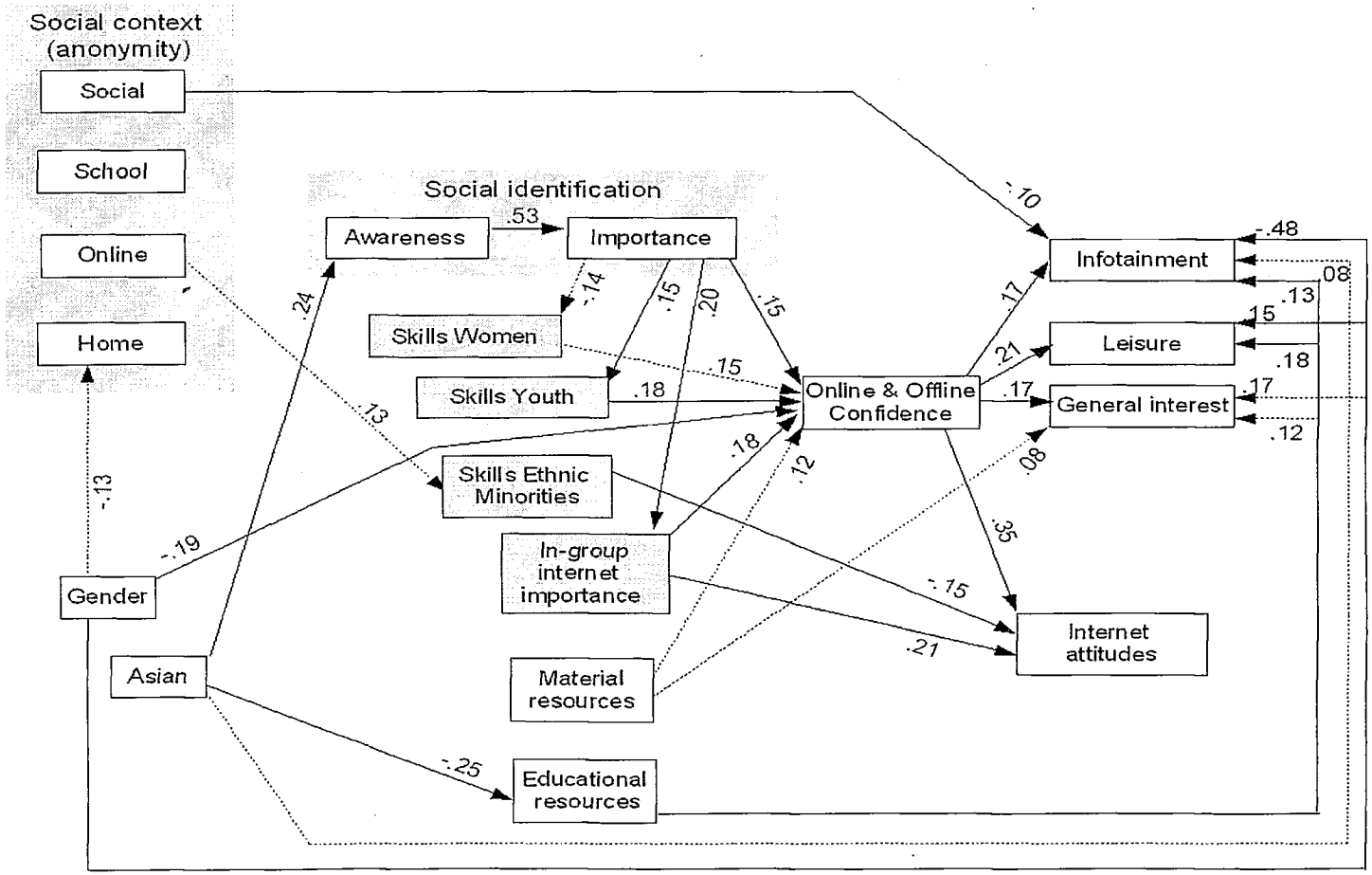
[67] $\chi 2(143)=557.12$, p=.00; RMSEA=0.07 (c.i.= .07-.08); NC=3.90; CFI=.75; AIC=689.12.
[68] $\chi 2(144)=461.25$, p=.00; RMSEA= 0.07 (c.i.=.07-.08); NC=3.20;CFI=.71; AIC=591.25.
[69] See Appendix VIII for coefficients and covariances of the models presented in this chapter.

Figure 6.2 Path model (a): Home use based on meso models



Base. Asian, African Caribbean and White teenagers who have access to the internet at home (N=500).
Note I. $\chi 2(132)=193.26$, p=.00; NC=1.46; RMSEA=0.03 (c.i. =.02-.04); CFI=.95; AIC=347.26.
Note II. Shaded grey boxes indicate the stereotypes measured.
Note III. Paths significant at p<.01 are indicated by a continuous line, those significant at .01<p<.05 are indicated by a dashed line. Paths that were not significant were fixed to zero and are not depicted.

Figure 6.3 Path model (b): Home use based on meso models



Base. Asian and White teenagers who have access to the internet at home (N=411)
Note I. $\chi 2(133)=203.66$, p=.00; NC=1.53; RMSEA= 0.04 (c.i.= .03-.05); CFI=.94; AIC=355.66.
Notes II & III. See Figure 6.2.

Table 6.8 shows that the meso model explains equal levels of variance in internet use at home for the internet status comparison (Figure 6.2) and for the social status comparison (Figure 6.3).

Table 6.8 R^2msc home uses explained by models based on internet and social status comparisons

	Basis of comparison	
Type of home use	Internet status	Social status
Infotainment	0.29	0.30
Leisure	0.10	0.09
General interest	0.08	0.06

However, attitudes are better explained by the comparison within groups of high internet status (21%) than within the groups that differ in their internet status (16%).

Internet status comparison

The low internet status *girls* were less confident and, due to this, used the internet less broadly at home than the boys and had less positive attitudes (βtot =-.03) towards the internet. However, because of a direct unexplained positive effect of gender on leisure and general interest purposes, the total effects of gender were that girls used the internet more for leisure (βtot=.12) and general interest purposes (βtot=.10) and less for infotainment at home (βtot =-.48). Since there was no path from gender to stereotypes or social identity variables, meso-level variables did not mediate home use for girls. Thus a difference in (on and offline) confidence could not be explained by a difference in the perceptions that the girls and boys had of the skills of women, ethnic minorities or young people, nor were they associated with a difference in the importance and awareness of identity between the boys and girls.

According to Figure 6.2, the lower social and internet status *African Caribbean* teenagers used the internet less than the higher internet status teenagers because they had fewer resources. This resulted in a slightly narrower use of the internet for general interest activities by the African Caribbean teenagers (βtot =-.01). There were no other direct or indirect links between ethnicity and use found in this comparison based on internet status. That differences in use between ethnic groups could be explained solely by the relationship between ethnicity and resources, coincides with the premises of the digital divide framework as presented in Chapter 4.

Social status comparison

The low social status *Asian* teenagers were less likely to have educational resources and therefore had more limited home use than the high social status White teenagers (see Figure 6.3). The Asian teenagers were also more aware of their group identity than the White teenagers. This higher awareness resulted in their identity being of greater importance to them, and in greater confidence which, in turn, led them to use the internet more broadly at home. Thus the relationship between ethnicity and internet use is mediated by the strength of social identity. The socially but not digitally excluded group of Asian teenagers was the only group for which meso-level factors such as social identification mediated the effect of group membership on use.

In addition there were cultural or social factors not captured by this model indicated by a direct path between ethnicity and infotainment use that led these low social status teenagers to use the internet more for infotainment.

In what follows the implications of these differences in the processes behind internet use for gender and ethnic groups are discussed for the theoretical frameworks and hypotheses that underlie the meso model in Figure 6.1.

Support for stereotyping and SIT frameworks

⇒ Since stereotypes existed about the internet skills and the importance of the internet for different groups and since these stereotypes had an effect on internet use by the teenagers, *H2a* (p.80) can be supported.

Perceptions about women's and young people's skills, and the belief that the internet is important for, the in-group had a positive indirect effect on internet use at home through their association with confidence. It is interesting to note that there was no difference between the boys and girls in the perception of women's skills in Figure 6.1 and 6.2 and that for both positive perceptions about women's skills were related to greater on- and offline confidence. These higher levels of confidence were also related to better resources but, since the boys and girls had similar levels of resources, this variable cannot be an explanation for the positive relationship between stereotypes, confidence and use. These results also imply that gender is not a direct explanation for the effect of stereotypes on internet use.

The importance of the internet for the group had an additional positive effect on attitudes towards the internet, while positive stereotypes about the skills of ethnic minorities were negatively related to attitudes.

⇒ Since stereotypes were directly associated with what the teenagers thought of themselves, *H2b* (p.80) is supported.

H2b does not just argue that stereotypes influence confidence, it assumes that stereotypes that exist in broader society about the in-group are internalised. The girls had lower levels of confidence which supports H2b within this group on the assumption that the stereotype about women is that they are of low internet status.

⇒ *H2b* is thus supported for the low internet status girls since they have lower levels of confidence which corresponds with perceptions of their group skills in wider society, and because negative stereotypes about women's skills lead to less confidence.

⇒ *H2b* is rejected for the teenagers of low social status (Asian) and for those who are of lower social and internet status (the African Caribbean teenagers) since there was no relationship between confidence and group membership for these groups.

⇒ Since stereotypes had a direct and indirect effect on use *H2c* (p.80) can be supported. However, since H2b can be fully supported only for gender and not for ethnicity differences, support for *H2c* is complete for gender only and partial for ethnicity.

⇒ Using similar reasoning and considering that all participants are part of the youth group, there is support for *H2b* and *H2c* in relation to age. Positive stereotypes about youth skills were positively associated with levels of confidence (H2b) and were therefore related to more positive attitudes and more internet use at home (H2c).

Figure 6.3 shows that the teenagers of lower social status (Asian) were more aware of their social identity than those of higher social status (White). The teenagers of different internet status (see Figure 6.2) did not differ in this awareness. Higher awareness was related to a higher importance of social identity no matter to which social group the teenager belonged but, since the low social status teens were more aware of their group identity, they also found this identity more important.

⇒ Since there is a difference in group awareness between the teenagers of low social status and those of high social status, *H3a1* (p.82) can be supported for social status comparisons.

⇒ Since there is no difference in group awareness between the teenagers of different internet statuses, *H3a1* cannot be supported for these comparisons.

⇒ *H3a2* (p.82) can be supported by these models for home use, since awareness was significantly related to importance of group membership.

Those who found their identity more important had more positive stereotypes about young people's skills and about the importance of the internet to the group, and tended to be more confident. However, those for whom the group was more important had less positive stereotypes towards the internet skills of women. This in turn was related to broader internet use at home.

⇒ Since group identification importance was related to both stereotypes and confidence, and since these were subsequently associated with use, *H3b* (p.82) can be supported.

⇒ *H3c* (p.82) is not supported because social context was not related to awareness or importance of social identity.

Support for digital divide and micro frameworks

As argued earlier, the Feminist approach incorporates elements of the digital divide framework; therefore the support for the digital divide hypothesis is discussed in this section. Since social status was related to confidence and internet use through the mediation of resources, the digital divide strand of traditional Feminist stereotyping frameworks was supported (see also section 4.4.2). Material resources were related to more confidence in the social status comparison model which is contrary to the findings presented in Chapter 4.

To rule out alternative micro explanations of internet use, the possible paths in the meso model as suggested by micro approaches (see Figure 6.1) were tested. If these paths were significant meso models should incorporate micro-level explanations. Since no relationship was found between attitudes and internet use when the meso-level

variables were included, there is no support for the (*H5d,* p.86) micro-level assumption that attitudes lead to use.

However, other micro framework assumptions in *H6a* (p.87) about the direct relationship between social context and use are supported. *Social anonymity* was directly related to infotainment: the less the teenager talked about what they did on the internet with others (i.e. the higher their offline anonymity was), the less they used the internet for infotainment at home. Other types of anonymity were not associated with use.

Support for untheoreised relationships

Not all the additional paths implied in Figure 3.7 were found to be significant. The teenagers with low internet status (see Figure 6.2) had less home anonymity. This difference did not have an effect on internet use at home.

⇒ Since group membership was directly related to anonymity, *Ha* (p.92) can be supported.

The teenagers of high internet status (see Figure 6.3) who protected their identity online had more positive stereotypes about ethnic minorities' skills. This was related to more negative attitudes about the internet. Thus a higher level of anonymity on the internet was indirectly related to slightly less positive internet attitudes (βtot=-.02). Other types of anonymity were not directly or indirectly associated to use.

⇒ Since some differences in social context were associated with stereotypes, *Hb* (p.92) can be partially supported.

The direct link between gender and use implies that cultural or socialisation differences could cause girls to use the internet less for sports, games and pornography, and more for arts, civic interest issues and other general interest and leisure uses.

⇒ Since there were direct effects between group membership and internet use, *Hx* (p.94) can be supported.

In summary, the meso models have explanatory value in understanding the differences in home use between the teenagers of lower and higher social status. The teenagers of lower social status are more aware and attach more importance to their group, which makes them more confident and leads to broader internet use. The framework is less appropriate for understanding the differences in home use between teenagers of higher and lower internet status since in this comparison social identification and stereotypes did not mediate the effect of socio-demographics on internet use in this comparison.

In addition there were relationships between gender, ethnicity and internet use that were not explained by the variables in this model, indicating that this model (which incorporates macro, micro and meso elements) was not capable of explaining which factors mediated the relationship between social status and internet use, and that a fourth framework might be needed to understand the processes behind internet use at home.

6.4.2 School use

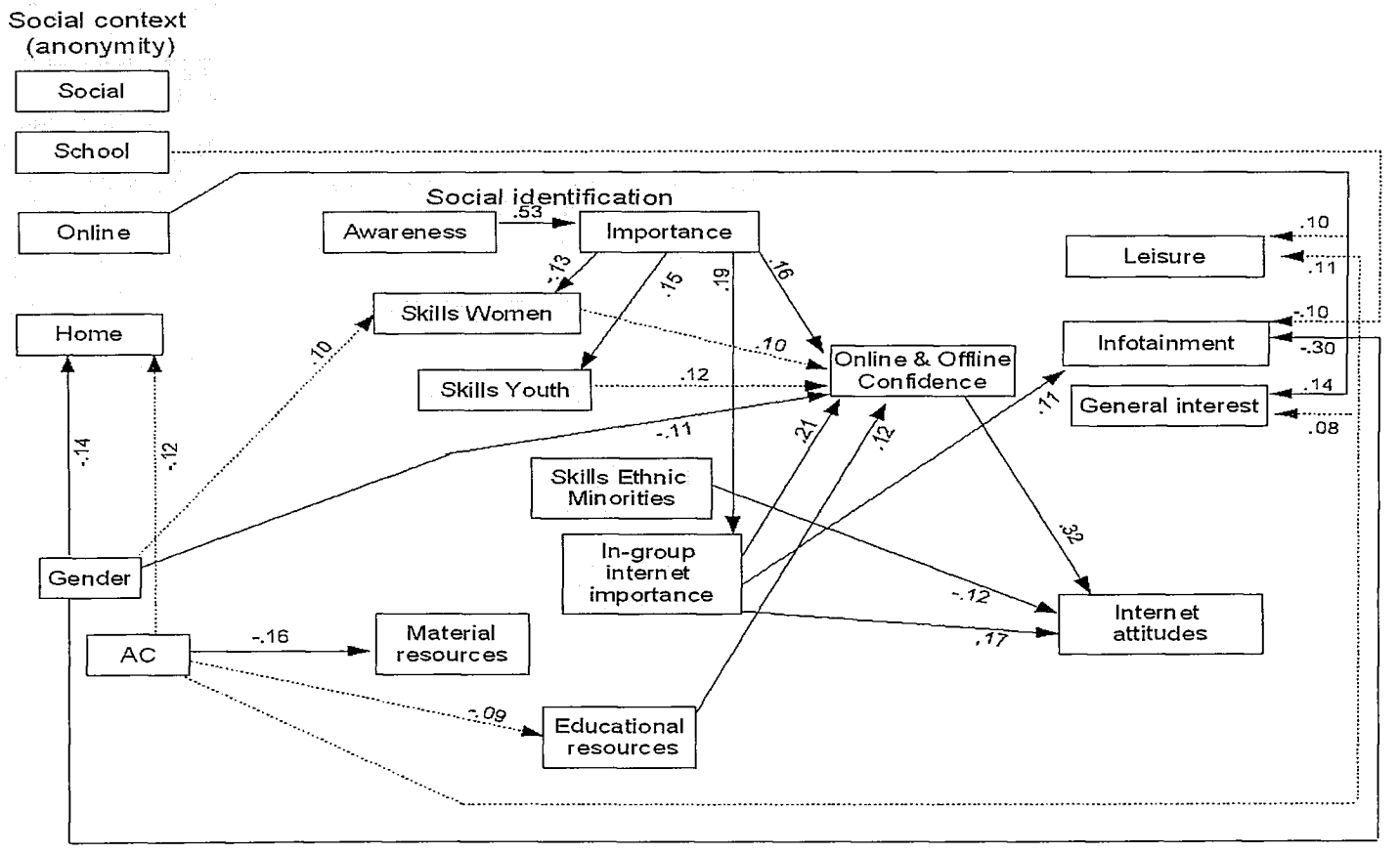
The question addressed in this section is:

Q6.8 *Can meso-level models explain internet use at school for groups with different social and/or internet statuses?*

As before, the model that included just the paths based on the SIT and Feminist approaches fitted on the NC and RMSEA indicators[70]. Adding the paths to the model as hypothesised in Figure 6.1 significantly improved the fit of the model (see Figures 6.4 and 6.5).

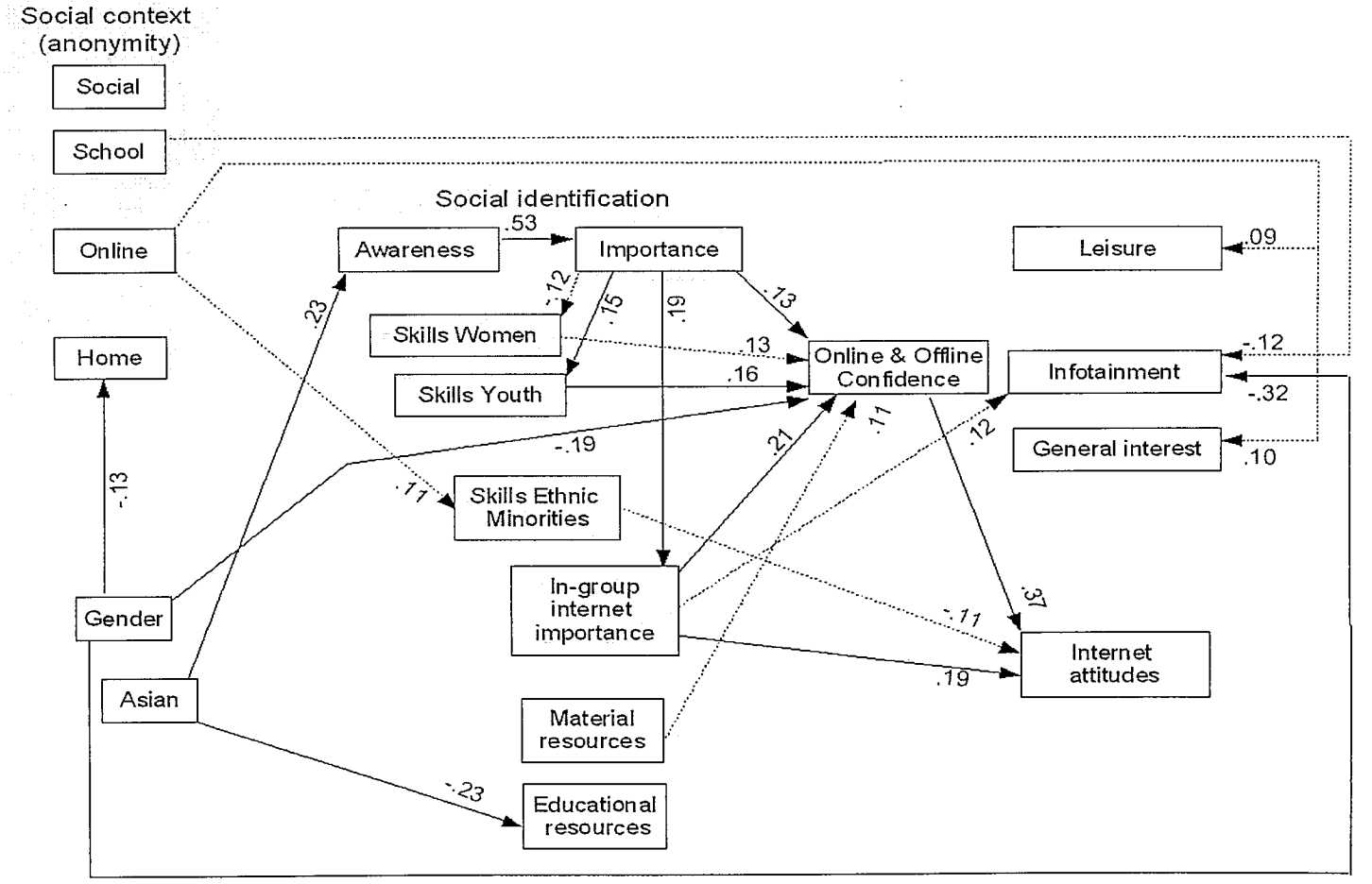
[70] Internet status comparison $\chi 2(145)=365.37$, p=.00; NC=2.52; RMSEA=0.05 (c.i.=.05-.06); CFI=.77; AIC=493.37.
Social status comparison $\chi 2(147)=356.26$, p=.00; NC=2.42; RMSEA=0.06 (c.i.=.05-.06); CFI=.76; AIC=480.26.

Figure 6.4 Path model (a): School use based on meso models



Base. Asian, White and African Caribbean participants (N=578).
Note I. $\chi 2$ (135)=233.21, p=.00; NC=1.71; RMSEA= 0.04 (c.i.=.03-.04); CFI=.90; AIC=381.21
Note II. Shaded grey boxes indicate the stereotypes measured.
Note III. Paths significant at p<.01 are indicated by a continuous line, those significant at .01<p<.05 are indicated by a dashed line. Paths that were not significant were fixed at zero and are not depicted.

Figure 6.5 Path model (b): School use based on meso models



Base. Asian and White participants (N=468).
Note. $\chi 2$ (138)=236.91, p=.00; NC=1.72; RMSEA= 0.04 (c.i.=.03-.05); CFI=.89; AIC=378.91.
Notes II & III. See Figure 6.4.

The meso-level model was slightly better at explaining infotainment use and attitudes and worse at explaining leisure and general interest use in social status comparisons than in internet status comparisons (see Table 6.9). In general, however, the variance explained is low.

Table 6.9 R^2msc school uses explained by models based on internet and social status comparisons

	Basis of comparison	
	Internet status	Social status
Infotainment	0.12	0.13
Leisure	0.02	0.01
General interest	0.03	0.01

Figures 6.4 and 6.5 show that there were paths in the processes behind school use that were absent in the modelling of home use. The implication of these differences for the testing of hypotheses is detailed in this section.

Support for stereotyping and SIT frameworks

The low internet status girls had a more positive image of women's skills than the boys and as a result felt more confident (see Figure 6.4).

⇒ Since gender was related to different stereotypes, *H2a* can be supported for internet status comparisons.

This indicates that positive stereotypes about the in-group could lead to higher individual confidence. Thus the negative effect of internalised gender stereotypes on self-confidence as found for the home use models were countered in the school context by consciously held positive stereotypes. In contrast, the girls from ethnic groups with high internet status did not have significantly more positive perceptions of women's skills (see Figure 6.5).

⇒ Since internalisation of stereotypes might have taken place within groups of different social statuses and since this internalisation was countered for groups with different internet statuses, *H2b* can be supported in a similar way to home use for the comparisons based on social status but not on internet status.

In the school use models, stereotypes were associated with confidence in a similar manner as in the models for home use, however, at school they were not directly

related to use. There was a direct relationship between stereotypes about the importance of the internet for the in-group and use: those who thought the internet was more important for the in-group used the internet more at school for infotainment purposes.

⇒ Since the relationship between stereotypes and use was not mediated by confidence, *H2c* is not supported for school use.

Those with more confidence did have more positive attitudes.

⇒ *H2c* can be supported when attitudes and not use were considered to be the outcome variable of interest.

⇒ Since groups with different social statuses had different levels of social identity awareness, *H3a1* can be supported, as it was for home use, for social status, but not for internet status comparisons.

⇒ *H3a2* is supported since awareness and importance were related.

Awareness and importance of social identity were related to stereotypes and confidence but this difference in perceptions of the self and the group were not subsequently associated with internet behaviour.

⇒ *H3b* can be supported because group norms were associated with perceptions of self and internet use. However, this effect of stereotypes was shown to be universal and not mediated by confidence, which indicates that support for H3b is only partial.

⇒ *H3b* can be fully supported when attitudes are assumed to be the outcome variable, because group identification was not associated with attitudes through the internalisation of group norms on confidence. This direct and indirect effect shows that group identification is related to attitudes, both through internalisation of stereotypes and through activation of general stereotypes.

⇒ Since social context was not related to social identification, *H3c* cannot be supported for school use.

Support for digital divide and micro frameworks

The findings in relation to the digital divide and micro frameworks confirm largely what was found in Chapters 4 and 5.

H6a is supported because social context was directly related to internet use at school.

H5d is not supported because attitudes were not associated with school use.

Because resources were not directly or indirectly associated with school use, the digital divide hypotheses related to Feminist frameworks (H1a-H1b) cannot be supported for school use.

Support for untheorised relationships

Those relationships that fell outside the theoretical framework presented by Figure 3.7 reflected what was found for home use.

⇒ *Ha* is supported because the groups had different social contexts of use.

⇒ *Hb* is supported because different social contexts were related to different stereotypes about ethnic minorities.

As was the case for home use this meso model with its combination of macro, micro and meso factors could not fully explain why the different groups used the internet differently at school. The girls were less likely to use the internet for infotainment and the African Caribbean teenagers used the internet more for leisure and general interest purposes at school.

⇒ *Hx* is supported, especially for internet status comparisons, since there were direct, unmediated relationships between group membership and school use that could not be explained by the meso model.

In summary, the positive association of in-group stereotypes and social context with school use supports the theoretical applicability of meso-level frameworks to understanding internet use at school. However, these models were more adequate for explaining differences in internet use based on social status than those based on internet status. There were fewer unaccounted for factors that could explain the differences between groups of lower and higher social status than in comparisons of groups with varying internet statuses. Within the internet status comparisons, direct

relationships between group membership and school use indicated that other frameworks might be needed to understand these differences.

6.4.3 Future use

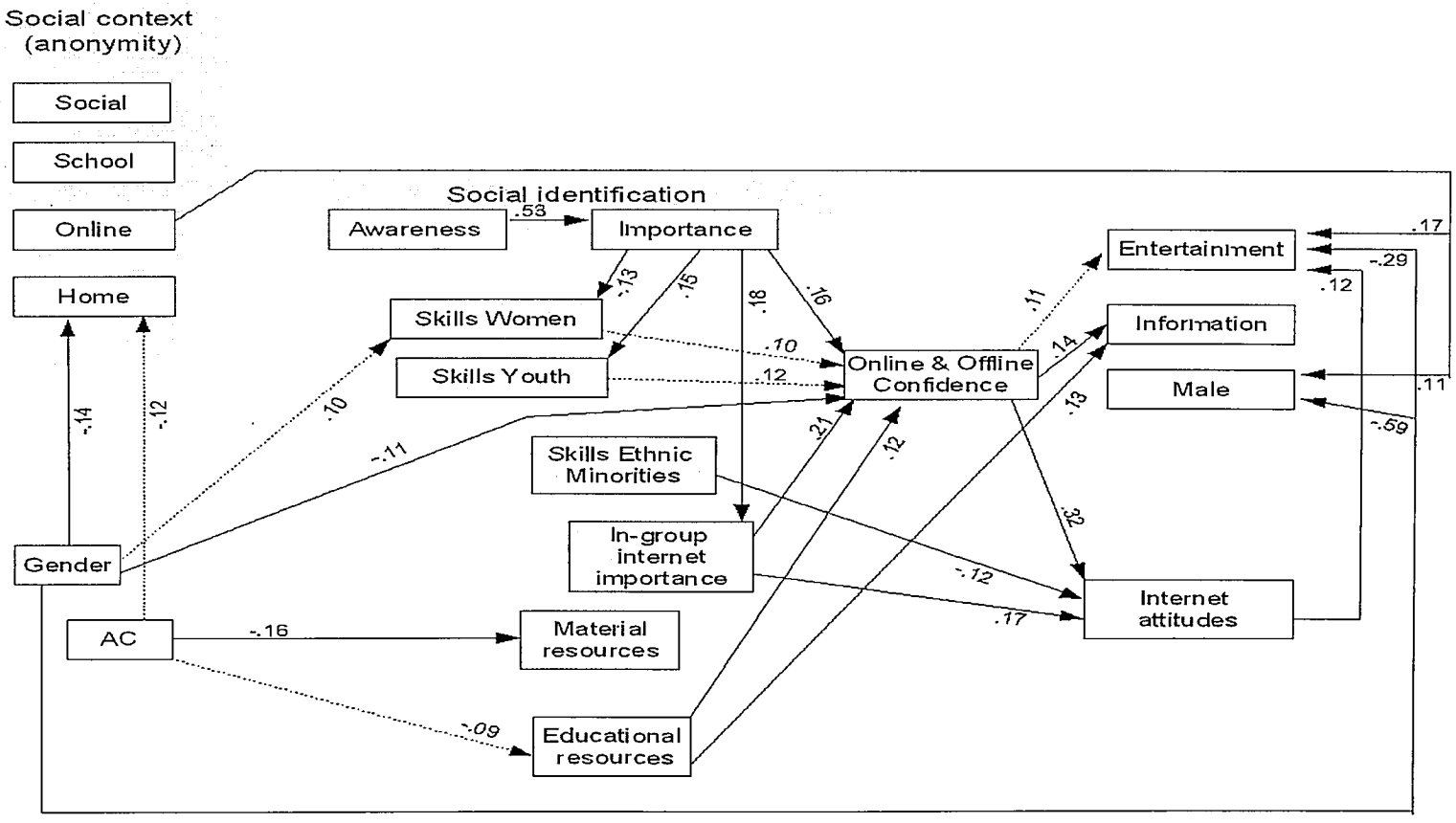
In this section, the question to be answered is:

Q6.9 *Can meso-level models explain intentions of future internet use for groups with different social and/or internet statuses?*

The testing of hypotheses for future use will be discussed only where the findings differ from those for home and school use. The model fits marginally for future use on complex model indicators.[71]

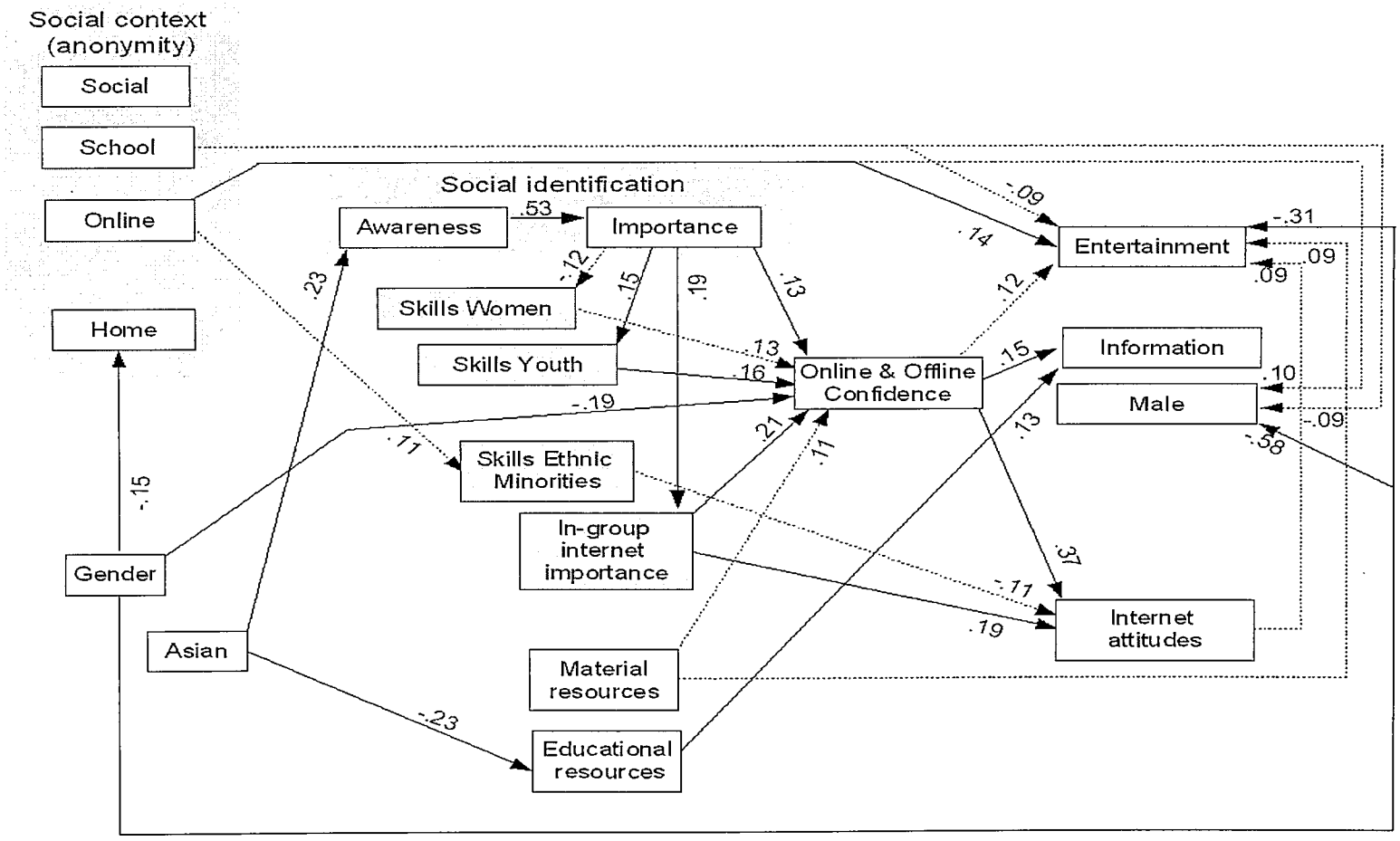
[71] Internet status comparison $\chi 2(145)=592.58$, p=.00; NC=4.17; RMSEA=0.07 (c.i.=.07-.08); CFI=.58; AIC=726.58.
Social status comparison $\chi 2(144)=533.22$, p=.00; NC=3.70; RMSEA=0.08 (c.i.=.07-.08); CFI=.60; AIC=663.22.

Figure 6.6 Path model (a): Future use based on meso models



Base. Asian, African Caribbean and White participants (N=578).
Note I. $\chi 2(134)=248.21$, p=.00; NC=1.85; RMSEA= 0.04 (c.i.=.03-.05); CFI=.90; AIC=398.21.
Note II. Shaded grey boxes indicate the stereotypes measured.
Note III. Paths significant at $p<.01$ are indicated by a continuous line, those significant at $.01<p<.05$ are indicated by a dashed line. Paths that were not significant were fixed at zero and are not depicted.

Figure 6.7 Path model (b): Future use based on meso models



Base. Asian and White teenagers (N=468).
Note. $\chi 2(132)=236.861$, p=.00; NC=1.79; RMSEA= 0.04 (c.i.=.03-.05); CFI=.89; AIC=390.86.
Notes II & III. See Figure 6.4.

The models in Figures 6.6 and 6.7 explain similar levels of information and male uses in the future, but the model that compares social status is slightly better at explaining entertainment use (see table 6.10).

Table 6.10 R^2msc future uses explained by models based on internet and social status comparisons

	Basis of comparison	
	Internet status	Social status
Information	0.04	0.04
Entertainment	0.16	0.18
Male	0.36	0.35

Support for stereotyping and SIT frameworks

The relationships between stereotypes, confidence and use as hypothesised by the Feminist stereotyping framework were similar to the models as tested for school and home use. In general, more positive stereotypes correlated with more personal confidence and to more positive attitudes. As for home use, these higher levels of confidence led to broader use and specifically to broader entertainment and information use.

⇒ H2a, b, and c are supported for groups with different internet statuses, since the different (gender) groups had different stereotypes and internalised these in their perceptions of self which was subsequently reflected in internet behaviour. These hypotheses cannot be confirmed for social status comparisons.

Similar to home use and school use, the premises underlying the SIT framework were supported and seemed more applicable to social status comparisons than internet status comparisons.

⇒ *H3a1* is supported for groups with different social statuses, because those with lower social status were more aware of their group identity.

⇒ *H3a2* and *H3b* are supported, since awareness and importance of group membership were related to broader internet use in the future through their association with perceptions of self. The direct effect of in-group stereotypes on attitudes further supports the argument that group norms directly influence cognitive processes, although not behaviour, without changing perceptions of self.

⇒ *H3c* is not supported because none of the anonymity types was related to group identification.

Support for digital divide and micro frameworks

Since educational resources mediated the relationships between ethnicity and internet use, the digital divide causal sequence (*H1a* & *H1b*) which was part of Feminist frameworks can be supported.

There is also support for the importance of micro-level theories. Since positive attitudes were positively associated with entertainment use, *H5d* can be supported and, since both school and online anonymity led to broader male and entertainment uses, *H6a* can be supported.

Support for untheorised relationships

As for all other locations of use, there was a relationship between social group membership and context of use, and between social context and stereotypes.

⇒ Since the girls and the African Caribbean teenagers had less anonymous home use contexts, *Ha* can be supported for the internet status comparisons.

⇒ Since online anonymity was related to more positive perceptions of ethnic minority skills in the social status comparisons, *Hb* can be supported.

The support for meso-level models of future internet use was strong, since the relationships between socio-demographics and use were all partially mediated by factors such as social identification and stereotypes. However, gender did have a direct unmediated effect on future entertainment and male internet uses, which suggests that there are explanations of differences in internet use between boys and girls that fall outside the assumptions of this meso model.

⇒ *Hx* is partially supported, since there were direct, unmediated relationships between (gender) group membership and future use.

In summary, the meso-level models are adequate for understanding the differences in future use for comparisons between groups with different social and different internet statuses. The comparisons between social status groups followed the causal sequence

as assumed by SIT theories while internet status comparisons followed the causal sequence envisioned by the Feminist stereotyping frameworks.

6.5 Summary and discussion

In previous chapters macro and micro frameworks were tested, and the findings suggested that there might be another framework that could explain internet use by vulnerable groups. In this chapter meso frameworks were tested in order to understand whether social identification as suggested by SIT, and stereotypes as noted in Feminist approaches, could fill some of the gaps left by the other frameworks in the understanding of internet use.

This chapter started by describing the variables that might influence internet use according to meso-level frameworks. These frameworks assume that group level perceptions influence how the person perceives themselves and that this subsequently influences their internet use. The factors that were used to test these models were group membership (socio-demographics), resources, social context (i.e. anonymity), importance and awareness of social identities, confidence, stereotypes, and attitudes. Of these variables, stereotypes and social identification (awareness and importance) were unique to meso-level frameworks. The focus in this discussion section is on these unique meso-level variables and their relationship to gender, ethnicity, disability and sexuality. After an overview of the differences between these groups, this section discusses the level of support found through path analyses for the hypotheses underlying meso-level approaches. The implications of these findings are discussed in relation to social and internet status.

6.5.1 Groups and social identity

This section discusses the differences that were found in relation to the meso-level variables between the different social groups, and is based mainly on the descriptive comparisons between the groups.

Gender

In comparison to the boys, the girls were in general more positive about the internet skill level of women and their group identity. No differences were found between the boys and girls in their awareness, or the importance, of their social identities. In terms

of the meso-level explanatory variables such as social identification and in-group stereotypes, the low internet status girls can thus be considered more advantaged or equal to the high internet status boys. The path analyses showed that the girls' positive stereotypes diminished, but did not cancel out, the negative effects of lower confidence (see Chapter 4) on internet use.

Ethnicity

Ethnicity has a dual relationship with the meso-level factors. The lower social status Asian and African Caribbean teenagers were more aware of their ethnicity than the higher social status White teenagers, and attached more importance to their social identities. No such differences existed between the high internet status Asian and low internet status African Caribbean teenagers.

These same ethnic groups held more negative stereotypes about women's internet skills, but there was no difference in their perceptions of other group level characteristics. However, the path analyses showed that this relationship might be spurious and caused by the negative relationship between social identification and these stereotypes. Those teenagers who felt that their social identities were important to them had more negative stereotypes about women's skills and, since the Asian and African Caribbean teenagers had higher levels of social identification, they also held these more negative stereotypes.

Physical ability

Disability did not make a large difference to meso-level characteristics. The disabled teenagers did not consider certain groups (including themselves) more or less skilled than the non-disabled teenagers. The only meso variable on which they differed from the non-disabled teenagers was group confidence. They felt less comfortable about being part of their in-groups. Based on the path models tested in this chapter, these low confidence levels should lead to less internet use at home and in the future. The descriptives in Chapter 4 showed that the disabled teenagers did indeed use the internet less at home but more in the future for male purposes. Therefore these meso-level frameworks cannot explain exactly what takes place in this group based on context, confidence and attitudes.

Sexuality

The LGB teenagers thought that the internet was more important for out-groups, showed less group confidence, and considered their group identity to be less important to them, in comparison to the heterosexual teenagers. The descriptives in Chapter 4 showed that LGB teenagers used the internet less for entertainment purposes in the future which, based on the path models, could be due to these lower levels of social identification and confidence.

The answer to Q6.3 is that the groups with lower social status (the ethnic minority, LGB and disabled teenagers) and the groups with lower internet status (the girls, African Caribbean, and disabled teenagers) differed from their high status peers in their meso-level characteristics. However, this difference was not consistently translated into stronger group perceptions or in-group stereotypes.

It seems that the distinction between social and internet status is not extremely relevant to meso-level variables, since there were no consistent patterns between those who had low social, or between those who had low internet, statuses. Traditional group distinctions such as gender, ethnicity, ability and sexuality are thus more useful when discussing stereotypes and social identification. The ethnic minority groups showed stronger social identification (Q6.6) and the disabled and LGB groups were less confident (Q6.5) and showed lower levels of social identification (Q6.6).

The finding that the low status groups, with the exception of the girls, did not differ consistently from the high status groups in their perceptions of the skill levels of different groups (Q6.4) could point towards the existence of universal stereotypes which go across group boundaries. This suggests that, if those individuals about whom group stereotypes exist have internalised these, they have done so without being aware of this internalisation (see also Haddon 2000, Wajcman 2004).

The implications of these findings for the modelling of relationships between stereotypes, confidence and internet use are discussed in the following section, which addresses the processes behind internet use based on a meso model that combines SIT and traditional stereotyping theories.

6.5.2 Testing causal assumptions: Are social identity and group perceptions important?

Traditional Feminist stereotyping frameworks assume that people have generalised perceptions of the characteristics of certain groups. The relationship between group membership and internet use is mediated, on the one hand, by the internalisation of these group stereotypes and, on the other hand, by the mediation of resources as described by digital divide frameworks. This causal process was formulated in H2a to H2c and the digital divide hypotheses H1a to H1b.

Social Identity Theory (SIT) assumes that different individuals have different levels of identification with social groups, and that these high levels of awareness and importance of group identity are requirements for group norms to have an effect on the way the person perceives themselves and how they subsequently behave. It is argued that these processes, expressed in H3a to H3b, are influenced by the social context in which groups interact with each other and the internet, and formulated under H3c.

Q6.2 asked how these frameworks could be combined into one model and the solution in this thesis was to integrate SIT and Feminist frameworks at the level of stereotypes and confidence and, otherwise, to let them run in parallel. This means that social context and group membership were assumed to influence social identification and, subsequently, stereotypes and confidence. Simultaneously group membership is assumed to influence stereotypes directly and relate to resources, both of which influence confidence. Stereotypes and confidence were assumed to directly influence attitudes and use. The combination of these frameworks suggested that additional hypotheses could be posed which link group membership with social context (Ha) and social context with stereotypes (Hb). Based on other frameworks, social context (H6a), resources (H1b1) and attitudes (H5d) were linked directly to internet use. If any of these additional hypotheses were supported, the argument was that a combination of macro, micro and meso frameworks might explain internet use, but that the meso model on its own is not sufficient.

Hypothesis testing

The hypotheses associated with the meso frameworks and the hypotheses that resulted from the joining of the two are repeated here and discussed in relation to social and digital exclusion.

> H2a: Stereotypes exist about all social groups in relation to the behaviour and attitudes of these groups.

H2a was supported earlier when stereotypes about group characteristics in relation to internet use came up clearly in the interviews presented in section 3.2.1.3. Further support for *H2a* was found in the survey, because stereotypes were associated with confidence and attitudes in all contexts.

The assumption underlying H2a is that different groups have different stereotypes. This was found to be significant only for comparisons of internet use between groups of different internet statuses at school and in the future, and not for home use or comparisons that had social status as their bases. *H2a* can be fully supported only for differences between gender groups in internet use at school and in the future.

> H2b: Stereotypes about social groups are internalised by members of these groups and mirrored in the opinions of each person about their own aptitudes and in their opinion about other objects and persons of other groups.

H2b can be supported because the perceptions of group level characteristics were directly associated with confidence. Positive stereotypes about young people's internet skills were related to higher confidence and, since all the participants were teenagers, this would mean a positive internalisation of stereotypes for all participants. The girls were less confident, which can be interpreted as a reflection of the internalisation of the negative stereotypes that were found to exist about women's internet use in previous studies and the interviews conducted for this thesis. Negative stereotypes about ethnic groups were related to more negative attitudes, as were more positive perceptions of the importance of the internet to the in-group. Ethnicity did not make a difference to the level of belief in these stereotypes, which means that they were universal and their internalisation would mean that ethnic minorities have more negative attitudes. Since in most cases no direct relationship was found between group

memberships and stereotypes internalisation was assumed to take place without the teenagers being aware of this effect.

The only exception was that when the girl teenagers consciously held positive stereotypes, about their group, which they seemed to do when they were compared in school and future use based on their internet status, the negative effect of internalised gender stereotypes was diminished.

> H2c: Positive stereotypes about the internet at a group level lead to positive appreciations of one's own internet use and, subsequently, to a broader use of the medium and a higher appreciation of it.

H2c can be supported for all locations and for internet and social status comparisons. The teenagers with more positive stereotypes were more confident, especially in their offline identity and these teenagers then went on to use the internet in a broader fashion at home and in the future. Similarly, perceptions of the in-group as being more dependent on the internet increased internet use and positive attitudes for these teenagers at school and in the future.

Part of the traditional Feminist stereotyping approach adopts the assumption of the digital divide framework that exclusion is related to resources. For home and future use the digital divide hypotheses (*H1a* and *H1b*) can be supported since the relationship between ethnicity and use was mediated by resources in these contexts. At home this mediation took place for all uses and, in the future, its effect was mainly on infotainment uses. At school *H1b1* cannot be fully supported because resources did not have a direct or indirect effect on school use.

SIT shifts the emphasis from perceived group level characteristics as the main determinants of behaviour to the influence of the level of social identification with the group to which people belong.

> H3a1: Members of different groups have different levels of awareness of their group identity.
>
> H3a2: These different levels of awareness are necessary for them to give importance to social identity, and for this to have differentiating effects on their self and group perceptions.

The association of awareness and importance of social identity with perceptions of group characteristics (stereotypes) and confidence was apparent in all the models presented in this chapter. Therefore *H3a2* can be supported for all the teenagers who participated in this study. *H3a1* can only be supported in understanding the differences in the processes between groups of different social statuses, since the direct relationship between group membership and awareness was only significant when the low social status (Asian) teenagers were compared with the high social status (White) teenagers.

> H3b: H3a2 is a necessary condition for (internalised) group norms to influence an individual's behaviour and attitudes.

Since H3a2 was supported for all the teenagers and since, for home and future use, confidence or internalised group norms were associated with internet use and attitudes, *H3b* can be supported for home and future use. This support is consistent since, in all locations and for all groups, stereotypes and confidence mediated the effect of awareness and importance of social identity on internet use and attitudes. Strong social identification had a positive effect on use because it increased positive perceptions about group norms and of the self.

The underlying proposition by SIT frameworks is that a high importance of the group to the individual is a necessary condition for these internalised group norms to have an effect (Joinson 2001; Spears & Lea 1994; Postmes et al. 2001). This is not supported, since the internalisation of these group norms (i.e. confidence and stereotyping) was also directly dependent upon group membership (see H2a and H2b), whether this group was important to the person or not.

In the school context, support for *H3b* was further weakened, first because confidence was only directly associated with attitudes and not with use and, second, because in-group stereotypes were directly associated with infotainment use without internalisation (i.e. confidence) mediating this relationship.

> H3c: The effects in H3a and H3b are stronger under those conditions in which both the individual group members and the person as an individual are anonymous but the group identity is known.

The effect of social context was important in explaining internet use and attitudes (see also Chapter 5), but the findings do not support the hypothesis that anonymity influences the effect of awareness and importance on internet use or attitudes. Therefore *H3c* cannot be supported.

However, *H6a* which assumes that context directly influences use can be supported. Support for *H6a* is especially strong for internet status comparisons and at school (see also Chapter 5), since under those conditions the relationship between social context and internet use was not mediated by any unique meso-level variables. This in turn supports the validity of assumptions made by CMC frameworks (Bargh 2002; Walther 1996).

Ha and Hb were added based on the theoretical assumptions underlying Figure 3.7 and are discussed below.

Ha: Different socio-demographic groups have different contexts of use.

Ha can be supported for comparisons based on internet status because the girls and the African Caribbean teenagers had less anonymity at home in comparison to their higher status counterparts. This could be a disadvantage in terms of increasing internet use or literacy (Livingstone 2002). However, this type of anonymity did not have any subsequent effect on use or confidence, which suggests that home anonymity could be less important than assumed in previous studies.

> Hb: Different social contexts lead to different influences of stereotypes, independently of whether teenagers categorise themselves or are conscious of their membership of that group.

Hb can be supported for the high internet status teenagers because different social contexts were related to different stereotypes only for the Asian and White teenagers. For these teenagers online anonymity was related to a positive perception of ethnic minorities' skills which were subsequently negatively associated with their attitudes towards the internet. For the mixed social status (including girls and African Caribbean) teenagers this effect of stereotypes occurred independently of social context. There is no theoretical explanation for why more positive stereotypes would lead to more negative internet attitudes. Internet skills and stereotypes about ethnic

minorities might be indicators of a third latent variable that explains this relationship, but this thesis cannot offer an answer to what this variable might be.

The meso model's value in explaining internet use based on social and internet status

The final hypothesis addressed in this chapter tested the inability of the meso model to explain the processes behind internet use in different vulnerable groups. Since the meso model included macro and micro elements, support for this hypothesis would suggest that a different, more comprehensive model is needed to understand internet use.

> Hx: Neither macro-, nor micro-, nor meso-level models explain internet use and a fourth model explains the differences in internet use between social groups.

Hx is partly supported because the meso-level model could not explain all the differences in internet use between the gender and ethnicity groups. Support for *Hx* is found for the social status comparisons at home, for internet status comparisons at school and for gender comparisons in relation to future use.

Direct relationships between gender, ethnicity and home use, without the mediation of meso variables, suggest that at home the meso model was not sufficient to explain internet use. The low internet status girl teenagers used the internet less for infotainment and more for leisure and general interest purposes than the high internet status boys, while the low social status Asian teenagers, used it more for infotainment than the high social status White teenagers. At school the low internet status girls and African Caribbean teenagers used the internet less for infotainment purposes than the high internet status boys and other ethnicity teenagers, without micro- or meso-level factors mediating this relationship. In addition, the African Caribbean teenagers used it more at school for leisure and general interest purposes. Similar unmediated relationships were found between gender and entertainment and male future uses, which the girls did less than the boys. These direct relationships between social group and use, without any mediation by stereotypes, social identification and self-perception, suggest that other explanations of internet use exist that cannot be captured by the meso model used in this chapter.

In summary, meso approaches that assume mediation by social identification and internalisation of group characteristics can explain the processes behind internet use only to a certain extent. Based on the support for *Hx*, it is argued that other, cultural or socialisation, processes need to be included in thinking about vulnerability and internet use, in addition to the meso-level processes tested in this chapter.

Explanatory value of meso models in different environments

The digital divide model was better at explaining home and future use than it was at explaining school use, and the micro models were better at explaining school use. One might predict that the meso-level model should be better at explaining both school and future use, because there is more pressure of stereotypes and group identity in these peer group related contexts.

The findings showed that the meso model explained the variance of home use to a greater extent[72] than use at other locations, and that it explained a bigger proportion of entertainment related uses than of leisure and general interest uses.

In understanding the processes behind internet use, a distinction needs to be made between social and internet status comparisons. Q6.7 to Q6.9 asked whether the meso model could explain the use of the internet by groups with different social and internet statuses and, while fit was good for all the locations, it was better for some group comparisons than others in different locations. The model fitted the processes behind home use (Q6.7) better for the internet status (AIC=347) than for the social status comparison (AIC=356) but, for school (Q6.8) and future use (Q6.9), the fit was better for the comparison between social status groups (AIC=379 & AIC=391) than it was for the comparison between internet status groups (AIC=381 & AIC=398).

The answer to Q6.1 is that the meso-level model tested in this chapter can explain the processes behind internet use at different locations (based on RMSEAs, NCs and CFIs). It was however not as appropriate for future and school use as it was for home use. The additional micro-level indicators as discussed in Chapter 5 might be the missing elements that would improve model fit at school while macro models could

[72] Based on R^2msc.

give insight into what takes place in relation to future use. However, this requires the incorporation of all the variables in the three models. This comparison between models will be presented in the next chapter.

6.6 Conclusions

The fit of the meso models in all locations offers support for an approach to internet use that incorporates the meso-level frameworks of SIT and traditional Feminist stereotyping frameworks. The structure of the meso path model differed considerably by location and by the type of exclusion that was investigated. This final section of Chapter 6 discusses the theoretical importance of the different meso elements, and how these differing patterns influence the theoretical development of this thesis.

6.6.1 Group perceptions and social exclusion

An assumption based on Feminist frameworks is that negative stereotypes about the group are internalised by the members of vulnerable groups and lead to negative self-perceptions in terms of media use (Paasonen 2002; Wajcman 1991, 2004; Haddon 2000). This chapter discussed the evidence for the existence of universal perceptions about groups' internet skills and the importance of the internet for certain groups. The findings showed that gender and generation, but not ethnicity, stereotypes were associated with perceptions of self, and that self-perceptions reflected those that existed in wider society. Stereotypes could therefore influence internet use and attitudes through the effect they have on confidence.

The positive relationship between stereotypes, confidence and attitudes is practically relevant. Positive stereotypes about vulnerable gender and youth groups and the in-group all stimulate greater self-confidence. More importantly, the influence of group perceptions implies that, for those teenagers who have a disadvantage because they have less resources (see also Chapter 4) and less anonymity as a group (see also Chapter 5), the negative influences of these macro and micro factors on use can be countered by stimulating positive perceptions of group abilities in using the internet. However, different types of group memberships need to be emphasised for different locations. Stimulating positive gender and youth stereotypes is useful for home and future use, and positive in-group stereotypes increase use at home, at school and in the future.

Part of the Feminist framework assumes that resources influence use through offering more opportunities to less vulnerable groups just like the digital divide model does. Although the findings supported the applicability of the digital divide part of the Feminist model in the comparison of ethnic groups for non-school contexts, the findings in this chapter show that Feminist frameworks cannot explain all the variances in internet use. Other processes not captured by traditional stereotyping and Feminist models must also occur, because there was a direct link between gender and entertainment types of internet use, and between ethnicity and internet use that was not mediated by stereotypes, confidence or resources. Therefore, models that emphasise meso-level variables do not appear to offer a definitive explanation for the differences in internet use between gender or ethnic groups.

Chapter 5 showed that social context was an important factor in explaining internet use. Its importance was confirmed in this chapter but, while the relationship in the previous chapter was assumed to be direct, in this chapter it was shown that the effects of anonymity were sometimes mediated by their relationship with (stereotypical) perceptions of skills at a group level. For the high internet status teenagers, anonymity was related to more positive stereotypes as regards minority groups. No such difference was found for the teenagers who varied in internet status. Thus the Feminist framework is useful, but location and social context need to be taken into consideration in trying to understand the variety of processes that take place for this generation.

6.6.2 Social identification: Awareness and importance

Feminist frameworks do not incorporate the effect of social context, but SIT frameworks do. Paradoxically, while there was a connection between traditional stereotyping variables which are part of the Feminist framework and context, there was no link between anonymity and social identity awareness, as assumed by SIT. Thus based on these findings, anonymity neither facilitates nor complicates social identification, but it is associated with the stereotypes held by an individual.

Arguably a survey is not the best instrument to measure a process that takes place outside the conscious awareness of an individual. However, the way in which group

membership was directly associated with confidence suggests that internalisation of stereotypes takes place without the person consciously adapting these group norms. This reflects the applicability of Feminist stereotyping frameworks.

There was also support for the applicability of the SIT assumption of conscious social identification and its influence on self-perceptions. The teenagers who were more aware of their social identity considered it more important and held different beliefs about other groups' skills. Through this relationship and through its relationship with confidence, internet use and attitudes were positively associated with higher in-group awareness and importance. SIT had not been applied to general internet use, but its premises are useful in understanding how group identification and group norms can lead to different types of uses.

6.6.3 Implications for the theoretical development of this thesis

Based on the findings it can be said that both the Feminist and SIT frameworks were appropriate to explain internet use. The fit of the meso model improved when assumptions based on the digital divide and micro models were added, while maintaining the same meso model variables. Even when these other paths were added, distinctions were less clear between social and internet status comparisons for the meso models than they were for the macro models tested in Chapter 4.

More importantly, there were still relationships between socio-demographics and internet use at different locations that could not be explained by this model, and it is possible that a fourth approach should be followed that incorporates such variables as culture and socialisation between social groups and macro structures.

Another option is that the elements tested in this and previous chapters are sufficient to understand internet use but that they have not been combined correctly. This could also imply that the causal assumptions underlying these models cannot capture the complex influences and interactions of these combined elements. Therefore, the approach taken in Chapter 7 is to ignore the causal sequence in these models and assume that all variables have equal direct effects on internet use. This makes it possible to test which variables are the most important, or would be sufficient, for understanding internet use by teenagers from different social groups.

The next chapter will examine through linear regressions which factors of the macro-, micro- and meso-level models are sufficient and/or important for explaining internet use, and investigate what each model contributes to the overall understanding of internet use in different contexts.

7 Macro, micro or meso, or a combination of the above: Internet use by socially excluded teenagers

In the previous three chapters it became clear that neither macro, nor micro nor meso frameworks on their own could explain internet use completely. This chapter investigates whether a combination of these frameworks leads to a more satisfactory explanation of internet use by teenagers from vulnerable groups.

The theoretical question to be answered is:

Q7.1a *How can existing micro- (individual), meso- (group) and macro- (societal) level frameworks be combined to study internet use and attitudes of vulnerable groups?*

In answering this question the traditional macro digital divide framework is seen as the most basic and most applied framework. Therefore in practice the main question in this chapter is:

Q7.1b *Do micro and meso frameworks have additional value on top of the macro frameworks used frequently in digital inclusion policies?*

In this chapter a brief section discussing the main empirical questions and hypotheses is followed by a short review of the fit of the models presented in Chapters 4 to 6, and by two types of linear regression analyses which explore the value of combining different models.

In the first type of linear regression the variables were entered in blocks through a 2-step hierarchical regression procedure. The base was a block of macro or digital divide variables, to which a block of variables related to the micro (CMC and U&G) models was added. In parallel, variables unique to the meso model were added to the macro variable base. These analyses show how much the predictive power of the model increases when micro- and meso-level variables are added, and thus tests the added value of using micro and meso models.

The second type of analysis, stepwise linear regression, examined which individual indicators from the macro-, micro- and meso-level models could explain internet use to the greatest extent. If gender or ethnicity was found to be associated with the explanation of a particular type of internet use, the processes behind this use were studied within the separate groups (i.e. within boys and within girls or within an ethnic group). On the basis of this last procedure conclusions were drawn about what increases or decreases this type of use within certain groups.

Putting these findings together may produce conclusions that relate to policy but the main focus in the discussion and conclusion sections at the end of this chapter will be on theoretical model and hypothesis testing.

7.1 Questions and hypotheses

In this chapter all the analyses are directed at exploring the importance of macro-, meso- and micro-level factors as they were presented in Figure 3.7 (p.89). By combining the models presented in the previous chapters, this chapter will examine which models and elements within these models have the greatest explanatory strength for different groups and contexts.

The empirical questions to be answered in this chapter are:

Q7.2 *Which models have the highest explanatory value in relation to internet use by different groups in different contexts?*
Q7.3 *Which elements of macro, micro and meso models are most useful in explaining internet use within specific groups?*

The combination of macro, micro and meso elements poses the hypotheses H7b and H7c, previously detailed in Chapter 3, about the relationship between status and the type of model (micro, macro or meso) that could be most appropriate for explaining internet use.[73]

[73] H7a cannot be answered through the analysis in this chapter, since the survey was not capable of capturing the effect of changing social contexts on the teenagers' internet status. These analyses will be conducted based on the experimental data presented in Chapter 8.

7.2 Findings: Different ways of testing the value of macro, micro and meso models

In previous chapters, the macro, micro and meso models were studied in isolation. The main argument in this thesis is that different frameworks need to be combined before conclusions can be drawn about the processes underlying internet use. Therefore this chapter focuses on what the survey findings show about the applicability of the different frameworks in comparison to, and in combination with, one another. In each of the analyses discussed in this section the variables that were presented in Chapters 4 to 6 were used. Table 7.1 contains the same information as the variable card and shows how the different variables were categorised as part of the different models.

Table 7.1 Variables in the macro, micro and meso models

Macro digital divide model variables:	
Labels	Variables
Socio-demographics:	Gender; Ethnicity; Ability; Sexuality
Resources:	Material resources in the home; Educational resources in the home
Access:	Use of the internet at home;
Online confidence (A):	Sum of (Technical confidence scale; Interaction confidence scale; Comparative self-efficacy scale);
Quantity of use (B):	Product of (Proportion of media use time spent online scale; Frequency of internet use);

Micro model variables:	
Labels	Variables
Social context (anonymity):	School anonymity; Home anonymity; Social anonymity; Online anonymity scale;
Time context (Likelihood future interaction):	Product of (Frequency of future use; B) ;
On- and offline confidence (C):	Sum of (Offline Individuality; Offline Pride; C) ;
Internet images:	The internet is good for ...Information and services scale; Engagement scale; Entertainment scale;
Internet needs:	The internet is important for ...Information and services scale; Engagement scale; Entertainment scale;
Internet attitudes:	Average of (the internet is ...Life enhancing scale; Awe inspiring scale; Not frustrating scale);

Meso-level variables:	
Labels	Variables
Socio-demographics:	Gender; Ethnicity; Ability; Sexuality;
Resources:	Material resources; Educational resources;
Social context:	Home anonymity; School anonymity; Social anonymity; Online anonymity;
Internet attitudes:	Average of (Life enhancing scale; Awe inspiring scale; Not frustrating scale)
Stereotypes:	Importance of the internet for ...the in-group scale; ...the out-group scale; Skills of ...young people; women; ethnic minorities; LGB; individuals (in comparison to older people; men; ethnic majority; non-LGB);
General confidence:	Sum of (Offline social group self-esteem; C);
Social identification:	Awareness of different in-group identities; Importance of in-group identities

Note .For the linear regressions in this chapter all individual variables (separated by ;) were used. Composite scales for confidence, quantity of use, time context and attitudes were used in the path analyses in chapters 4, 5 and 6.

7.2.1 Comparison of fit and explanatory values of path models

To draw conclusions about the explanatory value of the individual models, the following question will be addressed in this section:

Q7.4 *How much of the variance of different types of uses at home, at school and in the future is explained by the variables in macro, micro and meso path models?*

Table 7.2 summarises the variance explained by the path models presented in previous chapters.

Table 7.2 Explanatory values of macro, micro and meso models for home, school and future use based on internet and social status path model comparisons

	Model	Macro		Micro	Meso	
	Status comparison	Internet	Social	All	Internet	Social
Home use	Infotainment	0.26	0.27	0.09	0.29*	0.30*
	General Interest	0.08	0.07	0.06	0.10*	0.09*
	Leisure	0.08	0.07	0.10*	0.08	0.06
School use	Infotainment	0.01	0.00	0.03	0.12*	0.13*
	General Interest	0.09*	0.10*	0.02	0.02	0.01
	Leisure	0.01	0.00	0.08*	0.03	0.01
Future use	Information	0.04	0.09*	0.07*	0.04	0.04
	Entertainment	0.12	0.17	0.08	0.16*	0.18*
	Male	0.35	0.35	0.09	0.36*	0.35

* indicates highest R^2s in horizontal comparison between models.
Note I. Values are in R^2.
Note II. In the internet status comparison the processes behind internet use were compared between the boys and girls and between the low internet status (African Caribbean) and high internet status (Asian and White) teenagers.
Note III. In the social status comparison comparisons were made between the boys and girls and between the low social status (Asian) and high social status (White) teenagers.

Table 7.2 shows that infotainment and general interest use at home was best explained by the meso models (R^2=.29 & .30), while the micro model was best at explaining leisure uses (R^2=.10 & .09) in this same location.[74] At school, the meso models were better at explaining infotainment use (R^2=.12 & .13), while the macro models were better at explaining general interest use (R^2=.09 & .10), and the micro models were better at explaining leisure use (R^2=.08). The participants' perceptions of their future

[74] Comparisons between explanatory values were made horizontally between models and within status group comparisons. For example, R^2s were compared for general interest use between the internet status comparison in the macro model and the internet status comparison in the meso model. No distinction was made between internet and social status in the micro models and these R^2s were compared with both R^2s for the macro and meso models.

use show that information use was explained best for the (Asian and White) teenagers of higher internet status by the macro model (R^2=.09), but for all teenagers by the micro model (R^2=.07). Entertainment uses in the future were best explained by meso models (R^2=.16 & .18), and male uses by both macro and meso models (R^2=.36 & .35).

In summary, *infotainment*, *entertainment* and *male* uses were best explained by the meso model and *leisure* and *information* uses by the micro model. *General interest* uses were explained at home by meso and at school by macro models.

A second question has to be asked to understand the value of the different models:

Q7.5 *How well can macro, micro and meso path models explain the processes behind internet use at different locations?*

The fit of the different path models was invariably best for the macro or digital divide model (see Table 7.3), mainly due to its simplicity[75]. The meso models had the worst fit because they were the most complex.

Table 7.3 Fit of macro, micro and meso models

	Model	Macro		Micro[76]	Meso	
Status	comparison	Internet	Social	All	Internet	Social
Home use	AIC	79.83	80.12	297.94	347.26	355.66
	CFI	1.00	1.00	0.97	0.95	0.94
	RMSEA	0.02	0.03	0.04	0.03	0.04
School use	AIC	97.01	96.59	289.03	381.21	378.91
	CFI	0.97	0.96	0.97	0.90	0.89
	RMSEA	0.03	0.04	0.04	0.04	0.04
Future use	AIC	106.75	93.89	227.81	398.21	390.86
	CFI	0.96	0.99	0.94	0.90	0.89
	RMSEA	0.04	0.02	0.06	0.04	0.04

Note I. Comparisons made horizontally between all models and status comparisons.
Note II. Best model fit is indicated by a lower score on the AIC indicator and by the highest score on CFI>.90 and the lowest score on RMSEA <.5 (see also Kline 2005) –for explanation of indicators see section 4.4 (p.134).
Note III. The internet status comparison is based on the scores of the African Caribbean, Asian, and White participants. The social status comparison is based on the scores of the high internet status (Asian and White) participants.

[75] Calculations based on the AIC indicator. This indicator penalises for complexity and should only be used to compare non -hierarchical models (i.e. explaining the same uses with different explanatory variables).
[76] The model that included a path between social context and needs was used to calculate these values.

Table 7.3 also shows that *future use* was better explained by the macro model for the social (AIC=93.89) than for the internet status (AIC=106.75) comparisons. Similarly, meso models explained future use better for the social status comparison. On the other hand, these same meso models were better at explaining *home* use for the internet status comparison than for the social status comparison.

On the CFI indicator[77] micro models showed an equal fit to the macro model for *school* use. For *home and future* use the micro models were a better fit on this indicator than the meso model. On the RMSEA indicator[78] the differences were relatively small. The exception was *future* use where the micro models performed considerably worse than the macro and meso models.

In summary, the macro model explained the processes behind internet use best in all locations. The simplest and most efficient approach to predicting internet use would therefore use the traditional digital divide model. Notwithstanding this general finding, the fit of the models indicated that micro models should be considered in forming ideas about *school* use while, based on the RMSEA indicator, the meso models should be taken into consideration when predictions are made about *future* use.

7.2.2 Hierarchical regression of internet use

The previous section examined the explanatory value of the separate models. To understand it and how these models can be combined, this section presents the findings of a series of hierarchical linear regressions in which the variables related to micro and meso models were entered into an equation that used the traditional digital divide model as a starting point.

These analyses will address the following question:

Q7.6 *What is the additional explanatory value of the micro and meso models in comparison to the traditional digital divide approach to internet use by vulnerable groups?*

[77] CFI compares general model fit taking the independence model as the baseline model.
[78] RMSEA is an index that adjusts for sample size and does not assume perfect fit of the model (Kline 2005).

First, the analyses are presented for home and school use, then for future use and finally for quantity of use, which was described earlier only for the digital divide framework analyses. In these analyses the impact of individual variables is not discussed; the next section (7.2.3) will focus on this aspect through stepwise linear regression.

Table 7.4 presents the values associated with the base (macro or digital divide) model and the two alternative models entered in two separate 2-step hierarchical linear regressions. Model 2a, the first alternative, contains the variables in the base model plus the micro-level variables and model 2b, the second alternative model, consists of the base model plus the unique meso-level variables. For these analyses individual indicators and not the composite measures were used for quantity of use, time context, confidence and attitudes (see variable card).

Table 7.4 Hierarchical linear regression of internet use: Models entered in blocks

		Block	R	R^2	S.E.	ΔR^2	ΔF	df1	df2	p.
Home	General interest	1 (macro)	0.35	0.12	1.87	0.12	4.94	13	471	**
		2a (micro)	0.42	0.17	1.84	0.05	1.88	16	455	*
		2b (meso)	0.38	0.14	1.89	0.02	0.58	18	409	0.91
	Infotainment	1 (macro)	0.54	0.29	1.31	0.29	14.81	13	471	**
		2a (micro)	0.59	0.35	1.28	0.06	2.48	16	455	**
		2b (meso)	0.58	0.34	1.29	0.05	1.76	18	409	*
	Leisure	1 (macro)	0.33	0.11	1.33	0.11	4.56	13	471	**
		2a (micro)	0.42	0.18	1.30	0.07	2.30	16	455	**
		2b (meso)	0.40	0.16	1.33	0.05	1.24	18	409	0.23
School	General interest	1 (macro)	0.25	0.06	1.05	0.06	2.43	14	532	**
		2a (micro)	0.37	0.13	1.02	0.07	2.78	16	516	**
		2b (meso)	0.32	0.10	1.05	0.04	1.18	18	454	0.27
	Infotainment	1 (macro)	0.36	0.13	1.34	0.13	5.66	14	532	**
		2a (micro)	0.44	0.19	1.31	0.06	2.38	16	516	**
		2b (meso)	0.44	0.19	1.32	0.06	2.02	18	454	*
	Leisure	1 (macro)	0.27	0.08	0.91	0.08	3.10	14	532	**
		2a (micro)	0.38	0.14	0.89	0.07	2.46	16	516	**
		2b (meso)	0.36	0.13	0.90	0.05	1.54	18	454	0.07
Future	Information	1 (macro)	0.27	0.07	0.22	0.07	2.90	14	532	**
		2a (micro)	0.51	0.26	0.20	0.19	8.33	16	516	**
		2b (meso)	0.38	0.15	0.21	0.08	2.24	18	454	**
	Entertainment	1 (macro)	0.42	0.18	0.32	0.18	8.28	14	532	**
		2a (micro)	0.49	0.24	0.31	0.06	2.77	16	516	**
		2b (meso)	0.49	0.24	0.31	0.06	1.97	18	454	*
	Masculine	1 (macro)	0.59	0.34	0.29	0.34	20.00	14	532	**
		2a (micro)	0.63	0.40	0.29	0.05	2.86	16	516	**
		2b (meso)	0.63	0.40	0.29	0.05	2.22	18	454	**
Quantity	Frequency	1 (macro)	0.38	0.15	1.15	0.15	6.78	12	474	**
		2a (micro)	0.46	0.21	1.13	0.06	2.01	18	456	*
		2b (meso)	0.48	0.23	0.10	0.06	2.44	16	518	**
	Proportion	1 (macro)	0.38	0.15	1.15	0.15	7.64	12	534	**
		2a (micro)	0.45	0.20	1.13	0.06	2.32	16	518	**
		2b (meso)	0.49	0.24	0.10	0.06	2.07	18	456	*

Base. African Caribbean, Asian and White participants (N=644). Home use only for those with home access (N=500).

* F change significant, p<.05.=

** F change significant, p<.01.

Note I. Pair wise deletion used for missing variables.

Note II. Variables were entered in blocks (see Table 7.1). Blocks 2a and 2b contained the variables of the digital divide model + the variables in the micro (2a) or meso (2b) model. The ΔR^2 signifies the increase in variance explained by the variables in the micro or meso model when they are added to the base macro (1) block.

Note III. Home access not entered for home use. Proportion and frequency of use were not entered in the quantity of use equation. All variables entered in non-composite format.

Table 7.4 shows that macro models had a significant fit ($p<.01$) for home, school, future and quantity of use, but the additional explanatory value of the micro and meso models was different for different contexts of use.

Home and school use

For all types of uses at home and at school, the micro-level variables (including confidence, image and needs) had a significant additional explanatory value on top of the variance that was explained by the macro (digital divide) model which emphasises resources and access. These micro models explained an additional 5 to 7% of the variance. For leisure and general interest use, the meso model variables (including stereotypes and social identification) did not add significantly (only 2 to 5%) to the explanatory value of the macro model, but they did have explanatory value for entertainment.

Future use

In contrast to home and school use, the meso-level variables did add significantly to the explanatory value of the model for all types of future use. They explained 5 to 8% of the additional variance in information, entertainment and male uses. The micro models also explained a significant extra proportion, of which the additional value was considerably higher than for home and school use, ranging from 5 to 19%.

Quantity of use

Both the micro and the meso models added significantly (6%) to the variance explained in quantity of use.

In summary, hierarchical regressions support the findings based on model fit presented in section 7.2.1, which argued that macro-level explanations of internet use by vulnerable teenagers are valuable for all locations. However, the hierarchical regressions presented in this section showed that micro-level variables, such as needs and offline confidence, should also be considered in all contexts and for all uses, in addition to macro variables such as resources and access. Meso-level variables such as social identification and stereotypes were shown to be of added value to the macro model in explanations of future and quantity of use.

7.2.3 Stepwise linear regression

In the previous section the different level variables were entered in blocks into the equation, which gave an idea of the additional explanatory value of the micro and meso models on top of the macro model. However, another way of investigating these data is through stepwise linear regression, which examines which of all the variables (macro, micro and meso) explain internet use in its different forms to the greatest extent.

Home use

This section addresses the question:
Q7.7 *Which (types of) variables are most valuable in explaining different types of use at home by vulnerable teenagers?*

Table 7.5 shows which variables contributed significantly to explaining internet use at home.

Table 7.5 Stepwise linear regression: Home use

	General interest			Infotainment			Leisure		
	B	S.E.	β	B	S.E.	β	B	S.E.	β
(Constant)	-1.11	0.56		3.49	0.66		1.11	0.46	
Gender	0.38	0.18	0.10	-1.24	0.13	-0.40	0.54	0.13	0.19
Resources: Educational	0.24	0.07	0.16	0.13	0.05	0.11	0.19	0.05	0.18
Resources: Material	0.29	0.10	0.13						
Proportion of media use internet	2.70	0.80	0.15						
Frequency of internet use				0.19	0.05	0.15			
Technical confidence							0.18	0.07	0.12
Image: entertainment				0.11	0.04	0.11	0.17	0.04	0.19
Image: information and services	0.15	0.04	0.18						
Need: information	0.24	0.10	0.11						
Attitude: Internet is awe inspiring				0.23	0.08	0.12			
Stereotypes: LGB skills				-0.21	0.09	-0.10	-0.19	0.09	-0.10
R^2=		.14			.31			.14	

Base. Participants who had accessed the internet at home (N=500).
Note I. Models fitted the data significantly at p<.01 (based on ANOVAs).
Note II. Variables that did not contribute significantly to any of the three uses were excluded from this table; see variable card for a complete list of variables.

Macro-level variables

Socio-demographics, meso- and macro-level factors played a role for all types of *home use.* After controlling for all other variables girls were still more likely to use the internet at home for general interest and leisure purposes, while boys were more likely to use it for infotainment.

Resources, and especially educational resources, were significantly related to higher use at home.

Proportion and frequency, considered outcome variables in the macro-level model but explanatory in the other models, were significantly related to both general interest and infotainment use, but not to leisure uses.

Micro-level variables

Confidence, which was an explanatory variable in all models, was associated with leisure use at home. Since the influential variable was technical confidence, it was in this case a macro- and micro-, and not meso-, level indicator.

Images and needs regarding the internet, unique micro-level variables, played a significant role for all uses. Infotainment and leisure uses were related to entertainment images and general interest uses to information images and needs.

Meso and Micro variables

Anonymity was not significantly associated with home use.

Internet attitudes were associated only with whether infotainment uses were given to the internet at home and were not associated with general interest or leisure uses.

Meso-level variables

Importance and *awareness of social identity,* unique meso-level variables, were not significantly associated with home use.

Stereotypes had a negative effect on both infotainment and leisure uses; in particular those who thought the LGB teenagers were more skilled, were less likely to use the internet for infotainment and leisure purposes.

In summary, *infotainment* and *leisure* uses were explained by roughly the same factors, which are a collection of macro-, micro- and meso-level variables. *General interest uses* at home were explained by macro and micro variables, and meso

variables played a smaller role. Neither anonymity nor social identification were associated with home use.

Gender and home use[79]

Gender was independently related to the level of home use of these young people. In order to understand what causes these differences between boys and girls, it is useful to look at what predicts these types of uses within each gender group.

[79] See Appendix IV for the averages for all the variables in the model per group.

Table 7.6 Stepwise linear regression: Home use by gender

	General interest				Infotainment				Leisure			
	Boys		Girls		Boys		Girls		Boys		Girls	
	B	β	B	β	B	β	B	β	B	β	B	β
(Constant)	-0.50		1.91		-0.48		0.87		-0.81		2.35	
Disabled	-1.59	-0.18										
Resources: Material			0.37	0.25			0.23	0.22	0.13	0.12	0.23	0.23
Resources: Educational	0.41	0.17										
Frequency of internet use	0.45	0.25			0.30	0.23			0.18	0.14		
Proportion of media use internet			2.76	0.15			1.87	0.15				
Technical confidence	0.33	0.17							0.20	0.14		
Home anonymity					1.04	0.17			0.81	0.13		
School anonymity					-0.39	-0.13						
Image: engagement	0.18	0.16										
Image: Information and services			0.16	0.20							0.07	0.14
Image: entertainment							0.14	0.16	0.17	0.18		
Attitude: not frustrating	0.32	0.14										
Attitude: life enhancer					0.48	0.25						
Attitude: awe inspiring											0.30	0.16
Importance of group identities							0.32	0.19				
Stereotypes: LGB skills			-0.41	-0.15			-0.30	-0.15			-0.37	-0.19

Base. Participants who answered the questions and used the internet at school (Boys N= 213, Girls N=207). Weighted by ethnicity.
Note. Model fitted the data significantly at p<.01 (based on ANOVA).
Note II. Variables that did not contribute significantly to any of the three uses were excluded from this table; see Table 7.1 for a complete list of variables.

Table 7.6 shows that for the *girls* material resources, proportion of media use, image and stereotypes were the most important factors in explaining home use. The proportion of media use time spent on the internet only played a role for *general interest* and *infotainment use*, while information and services images explained both general interest and leisure uses but not infotainment. More surprising is that, within the girls' group, the stereotypes about LGB teenagers (and not about women or ethnic minorities) were related to internet use, while stereotypes were not associated with use in the boys' group. For *infotainment* the importance of group identity was also positively related to use.

In comparison to the boys, the girls were disadvantaged in relation to *infotainment* use at home. An increase in this use would be achieved by increases in their material resources, the proportion of time they spend on the internet in comparison with other media, their perception of the internet as an entertainment medium, and group identity importance and also, surprisingly, by countering negative stereotypes about LGB groups. The relationship between gender and negative stereotypes towards vulnerable (in this case LGB) groups is a puzzle that is difficult to solve. Stereotypes about skills were used as separate measures for separate groups because they did not combine well as in- and out-group scales (see section 6.3.1, p.208) The internet stereotypes could be indicators of wider beliefs and value systems instead of just perceptions of internet skills, which might be a partial explanation of these findings. In the summary and conclusions sections of this chapter this finding will be addressed further.

Within the *boys'* group there were different aspects that explained different types of use. Frequency of use was the only variable that was positively associated with all types of uses.

General interest use, which the boys tended to do less than the girls, was explained by disability, educational resources, confidence, image of the internet and attitudes. To increase boys' use of the internet at home for general interest purposes one could therefore increase their educational resources and their technical confidence, make them see the internet more as an engagement medium, and counter the belief that the internet is frustrating. Discouragingly, in terms of social exclusion, the disabled boys tended to use the internet less for general interest use.

Infotainment was explained mainly by anonymity and attitudes. Less frequent use, less positive attitudes, less anonymity at home and more anonymity at school would diminish the amount of infotainment (including pornography and games) that these boys consume at home.

An increase in *leisure uses* could be achieved by an increase in material resources and technical confidence, anonymity at home, and promoting the image of the internet as an entertainment medium.

School use

This section addresses the question:

Q7.7 *Which (types of) variables are most valuable in explaining different types of use at school by vulnerable teenagers?*

Table 7.7 Stepwise linear regression: Internet use at school

	General interest			Infotainment			Leisure		
	B	S.E.	β	B	S.E.	β	B	S.E.	β
(Constant)	0.05	0.28		2.43	0.37		-0.08	0.33	
Gender				-0.86	0.12	-0.30			
African Caribbean ethnicity							0.19	0.09	0.09
Home Access				-0.51	0.16	-0.13	-0.31	0.11	-0.12
Online confidence: Technical	-0.19	0.05	-0.17				-0.13	0.05	-0.14
Online confidence: Comparative self-efficacy	0.19	0.08	0.11				0.24	0.07	0.16
Social context: Online anonymity	0.11	0.04	0.12						
Social context: School anonymity				-0.33	0.12	-0.12			
Image: information and services	0.06	0.02	0.13						
Image: entertainment				0.14	0.04	0.16			
Image: engagement							0.08	0.02	0.15
Need: engagement	0.19	0.05	0.18						
Attitude: not frustrating							0.11	0.05	0.11
Stereotype: importance internet for in-group				0.35	0.09	0.23			
Stereotype: importance internet for out-group				-0.21	0.09	-0.13			
R^2=		.08			.17			.10	

Base. All participants who had valid answers on questions (N=488).
Note I. Models fitted the data significantly at p<.01 (based on ANOVAs).
Note II. Variables that did not contribute significantly to any of the three uses were excluded from this table; see Table 7.1 for a complete list of variables.

Table 7.7 shows that a wider range of variables was needed to explain use of the internet *at school* than to explain use at home. On average, the variance explained by the different factors was lower than for home use.

Macro-level variables

Gender, ethnicity, resources, and *access* did not explain *general interest* use at school. The boys did use the internet more for *infotainment* purposes at school, as they did at home, and the African Caribbean teenagers more for *leisure* use. The teenagers with home access tended to use the internet less at school for infotainment and leisure purposes.

Micro-level variables

Confidence was significantly associated with both general interest and leisure use, but technical confidence was associated in a negative, and self-efficacy in a positive, manner.

Images and needs were important for all three uses albeit in a different manner. Information and services images, and engagement needs, were associated with general interest uses, entertainment images infotainment use, and engagement images were positively associated with leisure use.

Anonymity played a role for general interest use and infotainment use, where those who protected their identity to a greater extent used the internet more for general interest uses, and those who had more anonymity at school tended to undertake less infotainment activities.

Attitudes were only important for an increase in leisure use.

Meso-level variables

The social identification *awareness* and *importance* variables were not associated with school use.

The unique meso-level variable *stereotypes* were not associated with infotainment use. Those who thought the internet was more important for their in-group and less important for their out-group said that they would use the internet more at school for infotainment purposes.

In summary, school use is in general best explained by micro factors. For infotainment use macro and meso factors also play a role, while for leisure use meso factors are not important.

Gender and ethnicity and school use

For school use, both gender and ethnicity made a difference in the extent to which the internet was used for infotainment and leisure purposes (see Table 7.7).To understand what led to these differences a separate linear regression was performed for these uses within the gender and ethnic groups.

Table 7.8 shows the processes behind infotainment use at school for the boys and for the girls and the processes behind leisure use for the African Caribbean, Asian and White teenagers.

Table 7.8 Infotainment use at school by gender and ethnicity

	Infotainment				Leisure use					
	Boys		Girls		African Caribbean		Asian		White	
	B	β	B	β	B	β	B	β	B	β
(Constant)	0.13		1.24		1.81		0.09		-0.19	
Sexuality									-0.69	-0.27
Disabled					-0.70	-0.23				
Resources: Educational			0.17	0.17						
Home access	-0.66	-0.15								
Frequency of internet use	0.18	0.14					0.18	0.21		
Proportion of media use internet									-1.52	-0.21
Online confidence: Interaction					-0.18	-0.18				
Online confidence: Comparative self-efficacy									0.27	0.19
Offline confidence: Pride					-0.39	-0.32			0.34	0.22
Offline confidence: Group self-esteem										
Social context: Home anonymity			-0.67	-0.19	-0.50	-0.19				
Social context: School anonymity	-0.48	-0.16								
Image: entertainment	0.12	0.13								
Image: engagement					0.28	0.51				
Stereotype: importance internet in-group	0.30	0.20								
Stereotype: young people's skills									0.13	0.17

Base. All participants (Boys N=242, Girls N=241, African Caribbean N=119, Asian N=149, White N=149).

Note I. Models fitted the data significantly at $p<.01$ (based on ANOVA).

Note II. Variables that did not contribute significantly to any of the uses were excluded from this table; see Table 7.1 for a complete list of variables.

Gender and school use

Table 7.8 shows that, if one would like to increase *infotainment* use in *girls* at school, improving their educational resources and making sure they have someone who sits and uses the internet with them at home would be appropriate (see Table 7.8).

As for home *infotainment* use, lowering the frequency of use and increasing anonymity will decrease this type of use by *boys* at school. Furthermore, increasing home access, lowering the perception of the internet as an entertainment medium, and decreasing the importance of the internet for the boys' in-groups should have the same effect.

Ethnicity and school use

The *African Caribbean* teenagers' leisure use at school was negatively associated with confidence and with anonymity at home, but a positive image was related to an increased and disability to a decreased use at school. Thus the African Caribbean teenagers who believed the internet was engaging and those who did not have a disability, were more likely to use the internet at school for leisure uses than those African Caribbean teenagers who did not have these characteristics. No meso-level variables were significantly related to leisure use within this group or the Asian group.

Based on the findings presented in Table 7.8, the *Asian* teenagers will only increase their leisure use when they increase their frequency of internet use, which was already higher than that in other groups.

The *White* teenagers, who used it least for leisure purposes at school, can be stimulated to use the internet more for this activity by an increase in confidence and by believing that young people are good at using the internet; if overall they would spent a lesser proportion of their time on the internet and more on other media, their internet use at school for leisure purposes would probably increase. The LGB White teenagers tended to use the internet less at school for leisure purposes than their heterosexual white peers.

Future use

This section addresses the question:

Q7.8 *Which (types of) variables are most valuable in explaining different types of intentions of future use by vulnerable teenagers?*

Table 7.9 Stepwise linear regression: Different types of future use with macro-, micro- and meso-level elements

	Information			Entertainment			Male		
	B	S.E.	β	B	S.E.	β	B	S.E.	β
(Constant)	0.00	0.07		-0.15	0.14		0.77	0.11	
Gender				-0.16	0.03	-0.24	-0.40	0.03	-0.56
Sexuality				0.14	0.05	0.13			
Resources: Educational	0.02	0.01	0.11						
Frequency of internet use				0.04	0.01	0.14			
Proportion of media use internet	0.27	0.08	0.14						
Frequency of use future							-0.04	0.01	-0.11
Online confidence: Interaction				0.06	0.02	0.15			
Social context: Online anonymity				0.04	0.01	0.13	0.03	0.01	0.11
Image: information and services	0.03	0.00	0.37				0.02	0.01	0.11
Image: entertainment				0.03	0.01	0.14			
Image: information	0.03	0.01	0.12						
Attitude: life enhancer	0.03	0.01	0.10	0.05	0.02	0.10	0.04	0.02	0.08
Attitude: not frustrating	0.02	0.01	0.08						
Importance of group identities							0.04	0.02	0.08
Stereotype: Young people's skills	-0.03	0.01	-0.16						
Stereotype: LGB skills							-0.04	0.02	-0.08
R2=		.25			.22			.39	

Base. All participants who had valid answers on questions (N=488).
Note I. Models fitted the data significantly at p<.01 (based on ANOVA).
Note II. Variables that did not contribute significantly to any of the uses were excluded from this table; see variable card for a complete list of variables

Macro-level variables

Table 7.9 shows that the macro-level factors *gender, sexuality* and *resources* explained entertainment and male uses of the internet in the future. The boys said that they would use the internet more for both purposes and the LGB teenagers would use it more for entertainment.

The *quantity of use* indicators were associated with all future uses, albeit differently: the proportion of time taken up by internet use was associated with information use, frequency was associated with entertainment use, and the likelihood of someone using it in the future was related to a less broad male use of the internet.

Micro-level variables

The micro-level factors strongly predicted future use. Interaction *confidence* was positively related to entertainment uses; online *anonymity* was positively related to *entertainment* and *male* uses; an information *image* was positively related to both information and male uses; and the other images were associated with use logically according to theme. *Needs* did not play a role.

Positive *attitudes*, an indicator in micro and meso frameworks, were positively associated with all future uses.

Meso-level variables

While *social identification* importance was mainly associated with *male* uses, *stereotypes* were negatively related to both *information* and *male* uses.

In summary, while the macro and micro elements were useful in predicting what the teenagers intended to do in the future in a general sense, the meso-level variables helped to predict both information and male uses.

Gender and future use

Gender was shown to make a difference in the degree to which the teenagers estimated that they would undertake entertainment and male uses (see Table 7.9). Table 7.10 shows the

variables that were associated with these types of behaviours within the boys' and within the girls' group.

Table 7.10 Stepwise regression: Entertainment and male type future use by gender

	Entertainment				Male			
	Boys		Girls		Boys		Girls	
	B	β	B	β	B	β	B	β
(Constant)	-0.25		-0.38		0.15		0.14	
Sexuality	0.16	0.15	0.14	0.13				
Frequency of internet use			0.05	0.18			-0.03	-0.16
Interaction confidence			0.10	0.23				
Online anonymity	0.04	0.12	0.04	0.12	0.08	0.24		
Image: information and services					0.02	0.13		
Image: entertainment	0.04	0.19						
Need: pastime and entertainment	0.10	0.30						
Need: information	-0.07	-0.22						
Attitude: life enhancer	0.12	0.27			0.09	0.19		
Stereotype: Young people's skills							0.03	0.15
Stereotype: LGB skills					-0.06	-0.14		

Base. Based on all participants who answered the questions (Boys N=242, Girls N=241).
Note I. Models fitted the data significantly at p<.01 (based on ANOVA).
Note II. Variables that did not contribute significantly to any of the uses were excluded from this table; see variable card for a complete list of variables.

If one would like to increase future *entertainment* use in *girls* the best approach, based on the findings presented in Table 7.10, would be to increase their frequency of use, improve their confidence in interacting online, and to increase the extent to which they protect their identities online.

For *boys* an increase in entertainment activities could be achieved by increasing anonymity, stimulating an image of the internet as entertaining, creating more needs to pass time and entertain oneself on the internet, but also by decreasing information needs and improving the attitude that these boys had towards the internet. It seems that the LGB teenagers, irrespective of their gender, wanted to use the internet more for entertainment in the future.

Male use was determined by a completely different process. If one would like *girls* to use the internet more in the future for sports and pornography, these findings suggest that they would have to use the internet less frequently and have a more positive impression of young people's skills. *Boys* who, according to the findings in Chapter 4, did not need to be

motivated to use the internet more for these purposes in the future, would see their use decreased by less anonymity online, a less positive image of the internet as a service and information provider, more negative attitudes towards the internet and more positive stereotypes about the skills of sexual minorities.

Quantity of use

This section addresses the question:

Q7.8 *Which (types of) variables are most valuable in explaining different levels of internet use by vulnerable teenagers?*

Table 7.11 Stepwise linear regression: Quantity of use

	Frequency			Proportion		
	B	S.E	β	B	S.E	β
(Constant)	3.71	0.36		-0.01	0.04	
Resource: Educational				-0.01	0.00	-0.08
Home access	0.43	0.14	0.13	0.07	0.01	0.23
Online confidence: Comparative self-efficacy	0.35	0.08	0.18	0.03	0.01	0.19
Online confidence: Interaction	0.17	0.06	0.13			
Online confidence: Technical				0.01	0.01	0.13
Social context: Offline anonymity				-0.01	0.01	-0.10
Image: entertainment	0.11	0.03	0.14			
Need: engagement				0.01	0.00	0.11
Attitude: life enhancer	0.18	0.07	0.11			

Base. Participants who answered the questions (N=488).
Note I. Models fitted the data significantly at $p<.01$ (based on ANOVA).
Note II. Variables that did not contribute significantly to any of the uses were excluded from this table; see Table 7.1 for a complete list of variables.

Macro variables

Table 7.11 shows that the macro variables *resources and home access* were both influential in determining quantity of use. Contrary to expectations, more educational resources actually diminished the proportion of time spent online.

Micro variables

Those who were more *confident* about their internet use skills used the internet more. *Images and needs* were differentially important. An entertainment image was related to more frequent use, while a need to engage led to spending proportionally more time on the internet.

Anonymity, a meso- and micro-level variable, was negatively associated with frequency; those who talked less about their use were inclined to spend a smaller proportion of their time on the internet.

Attitudes were related only the frequency of use but not how proportionally important the internet was.

Meso-level variables

Stereotypes and *social identification* did not play a role in determining quantity of use.

In summary, quantity of use was explained mostly by the digital divide framework and by a few additional micro-level indicators.

There were no differences between ethnic or gender groups and therefore no further analyses were required for quantity of use.

7.3 Summary and discussion

This chapter had three objectives which are discussed in this section. The first was to understand what the additional values of micro and meso models were on top of the traditionally used macro or digital divide framework, the second to understand which elements (macro, micro and meso) are most useful to explain different types of internet use, and the third to test whether the factors that explain internet use are different for teenagers with varying statuses.[80] The sections that follow discuss these issues addressed through different statistical methods. Section 7.3.1 examines variance and model fit to understand

[80] The conclusions drawn in this section apply to the specific group of vulnerable teenagers that participated in the survey. Conclusions are therefore restricted to Asian, African Caribbean and White teens in the Greater London Area and should not be generalised to the whole teenage population.

how well models can explain the causal processes behind use, and discusses hierarchical regression findings to understand what micro and meso frameworks can add to the traditional understanding of digital exclusion. Section 7.3.2 discusses the importance of individual indicators through stepwise regression and, in section 7.3.3, differences in stepwise regressions between groups and the hypotheses based on the general model presented in Figure 3.7 are discussed.

7.3.1 Added value of micro and meso models

The value of the micro and meso models in comparison to the macro model was tested in two different ways. First, the variances explained by the path analyses and their fit were compared and then the meso and micro models were entered as blocks in a regression that used the variables of the digital divide framework as a base. The first type of analysis investigated whether the different models fitted the causal assumptions behind macro, micro and meso frameworks. The second type of analysis examined what the micro and meso frameworks added to the traditional digital divide framework.

The first comparison in this chapter, based on model fit, showed that the macro digital divide model always had the best fit according to the AIC indicator which gives preference to simplicity over comprehensiveness[81]. The use of this indicator can lead to simplest model selection even if other models give a more comprehensive picture of the processes that take place. That is, if a model consists of only one highly significant path, AIC will prefer this simpler model over a model that is more complex and thus includes a larger number of significant paths, even if the latter model gives a finer grained picture of the different processes behind use. RMSEA and CFI indicators, measure fit without penalising for model complexity. Based on these indicators the macro model fitted all types of use well and the meso model had an equally good fit for future use but worse fit for school and home use. Micro models were similar to macro models in fit for school use, but worse for future and home use.

[81] The fit of the models to the processes behind internet use was tested on the basis of complete model fit indicators (AIC, CFI, RMSEA) and not through R^2 or variance explained for individual outcome variables.

Thus in answer to Q7.5 (p.252), macro models offered a good explanation of the processes behind home, school and future use, micro models fitted school use, and meso models aided explanations of future use.

These general fit indicators only show whether, on average, the whole model fits the data and do not show how good the different models are at explaining different types of use (Kline 2005). A model can fit the data without explaining internet use well if it is good at explaining a certain part of the path model that leads up to use, but not how much a person uses the internet. These findings based on model fit therefore had to be supported by further analysis.

Q7.4 (p.251) asked how well the (variance of) different types of uses can be explained by the three models. The answer, based on the multiple squared correlations, is that infotainment and entertainment uses were best explained by meso models, while leisure uses were explained by micro models, and male future use equally well by macro and micro models. For general interest use, fit depended on the location; home use was explained by meso models and school use was explained best by macro models. These findings indicate that a focus on different uses across contexts could be just as helpful as a focus on different contexts when trying to understand internet use. This is in line with Millwood-Hargrave and Livingstone's (2006) argument that there are similar processes according to type of use and not according to medium.

A similar conclusion can be drawn based on the variance explained by the hierarchical linear regressions and the different blocks of variables that were entered in the second type of comparison. The meso models, with a unique focus on stereotypes and social identity, did not contribute to non-entertainment uses at home and at school, but were a significant contribution to explanations of infotainment use. This could indicate that stereotypes and social identification play a greater role in entertainment related activities. Micro models, which incorporate anonymity, the image people have of the internet, internet needs and attitudes, consistently contributed to the explanatory value of the digital divide model which, on its own, significantly contributed to the explanation of use in all contexts and of all types. However, for future use and quantity of use, both the micro and the meso models added

significantly to the variance explained showing that all these models need to be taken into consideration when explaining internet use by teenagers, and even when context of use matters.

This leads to the preliminary conclusion, and answer to Q7.6 (p.253), that to explain why people undertake entertainment related activities such as gaming and sports, group level or meso variables cannot be ignored. Infotainment use depends on more than agency as advocated by the micro models and on more than resources and access as argued by the digital divide framework. Equally, for use at school, the digital divide model is not sufficient; personal characteristics of the teenagers are important in determining their internet use and should be incorporated into school policy discussions. In understanding home and non-entertainment uses, the traditional digital divide framework seems to be the most appropriate.

7.3.2 Which elements make a difference?

Which specific elements of these frameworks have the biggest impact on different types of use cannot be deduced from the separate analyses of these frameworks. These analyses could not answer questions such as exactly meso variable contributed to the explanation of infotainment, or which micro element was the most important contributor at school. Stepwise linear regressions offered insight into which variables are important when all other variables are taken into consideration. The linear regressions show that in internet use studies it is useful to focus on type of use as well as location of use.

Macro variables played a role in most locations of use. *Socio-demographics* or group membership was important for explaining entertainment and infotainment type uses and home use. In fact, gender was the most important explanatory variable for entertainment uses in all contexts and, not surprisingly, especially for male uses. This suggests that, for teenagers from vulnerable groups, gender continues to influence entertainment internet use independently of changes in resources, confidence, attitudes, stereotypes, or circumstances of use. *Resources* were associated to all uses at home and entertainment future use. *Access* was less important than it was assumed to be within the digital divide framework. Although access was the most important variable in explaining quantity of use, it was reversely related

to school use. That is, instead of increasing use, home access diminished use at school, presumably because the teenagers who did not have access at home compensated for this at school.

Like macro variables, *micro variables* were also associated with all types of uses at different locations. *Confidence* had a complex interaction with use. Those teenagers who were more skilled in online activities used the internet more at home for infotainment use, and planned to undertake more entertainment uses in the future. School seemed to be a compensatory environment for the teenagers who felt less confident about their technical skills but simultaneously thought that, in comparison with others, they were good at using the internet. These teenagers used the internet more for general interest and leisure uses at school. The linear regressions showed that offline confidence was not as important in determining what these young people do online. The *image* of the internet had an impact on the range of uses across different contexts, but not on quantity of use. Contrary to U&G assumptions that agency is the most important aspect of internet use, *needs* played a relatively small role and were only important for information types uses. Although a micro or agentic approach would assume that *attitudes* play an important role for all the different types of use, these analyses show them to be important only for infotainment use at home and leisure use at school. They do seem to be good indicators of intentions of future use. While positive attitudes did not lead to more breadth in current use, they did increase all types of use in the future, and increased the frequency with which teenagers go online - another indication that, for future use, social factors and expectations are more influential than for actual current use.

Social *context* or *anonymity* which is both a micro and a meso variable is useful to explain information and entertainment uses. *Individual meso variables* are not as consistently influential as micro variables. However, some interesting findings were presented about when they do play a role. A special case was negative LGB *stereotypes,* which were related to a negative approach towards the internet and the use of undesirable contents online at home and in the future. Those who believed LGB teenagers to be less skilled tended to use the internet less for infotainment and male uses. This might be due to an underlying factor of sensitivity to sexuality issues (pornography was a part of infotainment use at home) or

conservatism (related to homophobia), which predisposes these teenagers to be also less prone to using new technologies for entertainment. This is replicated by the association between negative youth stereotypes and information use - perhaps these stereotypes are related to conservatism, something not directly measured by this survey. More conservative teenagers could perhaps be less prone to use the internet in general and even less likely to use it for inappropriate uses. While in the path analyses a negative effect on attitudes and use was found for ethnic minority stereotypes was found, not be confirmed in these linear regressions.

These general group level stereotypes were not associated with school use, but the ideas about how *important the internet* is for one's group were strongly related to entertainment activities at school. For future use, a similar pattern was found where those for whom *social identity* was more important used the internet more for male uses. SIT assumptions about *awareness* of social identity as an important factor cannot be supported by these linear regressions - the variable had no effect on use. Meso-level variables did not play any role in explaining the traditional digital divide outcome variable quantity of use.

In summary and in answer to Q7.6 to Q7.8 (p.253-273), these analyses suggest that meso-level variables, such as social identification and stereotypes, play a role in relation to entertainment or less desirable uses, but not to the same extent for those activities that are considered commendable by parents and teachers (i.e. leisure pursuits and general interest uses). For these other uses micro factors, and especially confidence and the image of the internet, were more useful aids to explaining internet use.

The findings show the same pattern as in the other analyses conducted in this chapter. Macro factors socio-demographics (gender) and resources are influential in home, quantity and future use, but play a lesser role for school use where micro factors such as confidence and attitudes play a larger role. Meso variables were again shown to be associated with future use and, to a lesser extent, with entertainment related school uses.

7.3.3 Processes behind internet use in different groups

The exploratory interviews presented in section 3.3.1 showed that stereotypes exist about women and African Caribbean individuals that give them a lower status in relation to internet use. Internet use was seen as something that they are less interested, and therefore less skilled, in. The survey data do suggest that girls have less confidence in their internet skills and that, in general, African Caribbean teenagers use the internet less broadly.

To test whether the factors that determined use varied for these different vulnerable groups (Q7.3, p.248), individual linear regressions were conducted whenever gender and ethnicity had an impact on internet use independent of the other variables in the combined model. In previous chapters it was proposed that, instead of investigating social groups, it might be useful to distinguish processes within groups where social status is the main differentiator, from processes between groups where internet status might be the main distinguishing factor. Therefore the analyses presented in this section are consistently phrased in social and internet status terms in addition to the traditional distinction between gender, ethnicity, ability and sexuality groups. First, general differences are described between locations and groups, and subsequently, these findings are discussed in relation to H7b and H7c.

Location and group differences

The main factor that determined internet use differences between the boys and girls was the girls' lower level of confidence. However, the stepwise linear regressions showed that the variables that explained high use within the girls' group are different from those that explained high use within the boys' group. This difference was even more apparent for the processes within the low internet status (African Caribbean) group in comparison to those within the high internet status (White and Asian) ethnic groups. In fact, as will be argued in what follows, some interventions could have opposite effects in, for example, African Caribbean teenagers and White teenagers. Therefore a uniform approach across group boundaries to increasing or decreasing use would be unfortunate.

At *home*, the low internet status *girls* differed from the high internet status *boys* in all types of use. The most important variables that explained home use in the girls' case were their

resources (macro variable), the image they had of the internet (micro), their attitudes (meso/micro), the importance of their group identity (meso) and stereotypes (meso). For the *boys*, the variables that carried the most weight were frequency of use (micro/macro), attitudes (meso/micro) and the image they had of the internet (micro). Based on these findings, and assuming that the relationships indicate causality as proposed in the general theoretical model, an increase in boys' use of the internet at home for general interest or leisure purposes could be achieved by increasing their frequency of use and stimulating engagement images and technical confidence. This would not influence how girls use it in these ways. Increasing frequency of use might also increase less desirable infotainment uses at home. The only way to diminish infotainment use in boys without affecting more desirable general interest and leisure uses is by discouraging positive attitudes. To increase girls' use of the internet for infotainment purposes at home, the most effective action would be to improve the image they have of the internet and strengthen their social identification. This would not influence boys' use at home. There were no differences between *ethnic* groups in internet use at home that could not be explained by differences in other variables such as resources, which does not mean that the processes behind their home use might not differ (see, for example, Chapter 6) but these different processes lead to similar outcomes in use.
For *school use,* only gender differences in infotainment were found: for the *boys* the most important variable was the importance of the internet for the in-group (meso), while for the *girls* it was home anonymity (micro and meso). If girls could be motivated to use the internet at home with someone else they might be further encouraged to use the internet for infotainment at school. The boys did not need encouragement to use the internet at school for infotainment purposes and home anonymity was not associated with their school use.

Ethnicity directly was directly associated with the level of leisure use at school. For the low internet and social status *African Caribbean* teenagers, confidence online and offline (micro), anonymity (micro/meso), and image of the internet (micro) were important factors that diminished leisure use. The leisure use of the low social and high internet status *Asian* teenagers was determined by frequency of internet use (macro/micro) and, for the high status *White* teenagers, proportion of use (macro/micro) and confidence (micro) were the most important indicators.

The factor that most distinguished the processes in the low internet status African Caribbean group from the other groups was the negative relationship between online and offline confidence and use at school. School seemed to be a compensatory environment especially for the low internet status teenagers. Those who felt less confident and had less anonymity at home compensated for this digital disadvantage by using the internet more at school which was perhaps a safer environment in which to use it. This is especially remarkable because offline confidence had the opposite effect on the high social and internet status White teenagers: the more confident White teenagers used the internet more instead of less for leisure purposes at school. The solution for increasing school use in low social and high internet status Asian teenagers is simple: increase the proportion of the time that they spend on the internet and they will use the internet more to pursue leisure interests. Detailed comparisons further showed that the *LGB* White teenagers used the internet less for leisure purposes at school; this was not the case for any of the other ethnic groups.

In *future uses*, there were no ethnicity differences, but there were gender differences in information and male uses. For the *boys,* needs (micro) and attitudes (meso/micro), and, for the *girls,* online confidence (macro/micro) were the most important in explaining information use. There was no one dominant factor explaining male use by the girls but, for the boys the variable that contributed most to their increased male use was online anonymity (micro/meso). *Sexuality* was important only for entertainment use in the future; the low social but high internet status LGB teenagers were more likely to undertake this type of behaviour in the future.

Disability did not emerge as an influential factor in any of the general analyses; however, in the more detailed analyses, disability was shown to have a negative effect on use in the African Caribbean and boys' groups. Although not a consistent finding, perhaps because there were not many disabled participants, this does paint a discouraging picture of the lack of inclusion for disabled participants in groups that are already excluded.

Hypothesis testing

In Chapter 3 a number of hypotheses were posed that could only be tested by combining macro, micro and meso variables in one analysis and framework. These hypotheses are repeated below and discussed in answer to Q7.2 (p.248).

> H7b: For groups about whom high status stereotypes exist in relation to internet use, traditional digital divide indicators and personal (micro-level) indicators are most influential in determining internet use.

H7b can only be partly supported because the internet use of the high internet status groups was often, but not always, explained by macro and micro factors. In support of *H7b* all the high internet status boys' home use was determined by macro (resources and access) and micro (confidence, image, needs, and attitudes) factors. For infotainment at school, however, macro factors played a smaller role, and meso variables (stereotypes) significantly contributed on top micro factors such as needs and attitudes. In fact, for the boys, the most significant contributions were made by micro-level factors for all contexts and uses except infotainment use at school.

The internet use of the Asian (high internet status) teenagers was completely explained by frequency of use, a variable important to both the digital divide and the micro-level frameworks. For the White (high internet status) teenagers, *H7b* cannot be supported, since stereotypes were important in explaining their use at school. Nevertheless, micro-level indicators were the most important.

Thus there is partial support for *H7b,* that social identification is not as important for groups who have a high status in terms of internet use. This conclusion should be narrowed down by stating that, for those groups which are assumed to be advantaged in terms of internet use, micro or agency factors play a dominant role in determining use, with perhaps the exception of school use.

> H7c: For groups about whom low internet status stereotypes exist, meso-level factors such as stereotypes, are most important in determining internet use and attitudes.

H7c can be supported for the low internet status girls, since stereotypes and social identification were important factors in addition to micro variables for all their home and future uses. The African Caribbean (low internet status) teenagers' internet use was not explained by any meso-level variables, with the exception of anonymity, which indicates a lack of support for *H7c*. The strongest relationships with use for the African Caribbean teenagers were with micro-level indicators.

Therefore the answer to Q7.2 is that, while internet use by those who are assumed to be digitally included can be explained by relatively similar macro and micro factors, for the digitally excluded the processes vary.

7.4 Conclusions

Based on the findings presented in this chapter, it is clear that integrating micro and macro-models would aid our understanding of why members from certain socially excluded groups use the internet. The analyses showed that the image these teenagers had about the internet especially was important in determining what they did with the medium. In general meso-factors, especially stereotypes and social identity importance, seemed to play the biggest role in explaining infotainment or entertainment related activities. A few general conclusions can be drawn about the nature of these processes and the (in)evitability of differences between social groups; these will be discussed in this section.

7.4.1 Anonymity and group norms

Anonymity was shown to have an impact in more than one context, but the findings suggest that group norms do not always play a bigger role in anonymous contexts, as suggested by SIT. Anonymity was associated with entertainment activities but not with information and interest oriented activities. Therefore the effect of anonymity has to be studied in relation to the type of use.

SIT argues that group norms have the largest impact in low status groups in anonymous circumstances (e.g. Ellemers & Van Rijswijjk 1997). The findings show that the absence of peers (anonymity) could lead to less 'teenage typical' (i.e. infotainment) behaviour at school,

and had a bigger impact on the White boys than on the other ethnic groups, which contradicts SIT assumptions. However, in support of this argument, at home and for future use, anonymity did increase behaviour desirable according to teenage group norms (e.g. gaming, pornography, sports). In the other chapters there was also evidence of the importance of teenage group norms, and this idea about peer pressure in relation to anonymity in different locations is further elaborated on in Chapter 9.

7.4.2 Bridging the gap at school?

The findings in this and previous chapters suggest that school is an equaliser. Resources ceased to be important and home access actually diminished school use, implying that those who do not have access at home compensate by using the internet more at school. Further support for this hypothesis was that those who were technically less confident used the internet more at school. Digital exclusion might therefore be partly overcome by providing access at school (see also Attewell 2001; Natriello 2001). It is, however, likely that use at school is more limited and restricted than use at home (Hayward, Alty, Pearson & Martin 2002; Mumtaz 2001; Sutherland-Smith, Snyder, & Angus 2003). It might also be less likely that those who have access at school but not at home will continue to use the internet when their education finishes. Therefore the provision of universal access at school is not a final solution to digital exclusion.

7.4.3 Different uses and different groups: Different interventions?

The second aim of this thesis (see section 1.2) was to create a theoretical model that enables researchers to study the processes behind internet use by using a combination of macro, micro and meso frameworks. An underlying motivation behind the creation of such a model was to explore when social and digital exclusion mattered in relation to the use of the internet. Previous research has treated digital and social exclusion as the same; however, this research showed that the effects of these different types of exclusion can be disentangled to understand the complex processes behind internet use.

To explain entertainment use in the variety of different contexts explored in this chapter, *gender* is impossible to ignore. The high internet status boys tended to undertake entertainment activities to a far greater extent than the girls of lower internet status did.

Internet status in general seemed important for leisure activities, as also shown by the effect of African Caribbean ethnicity on use at school. Similarly, leisure uses were undertaken more frequently by the girls than the boys, especially at home.

One issue might be how entertainment, or spending time on purposes other than information or engagement, has been defined. Boys play more games, seek out more sports and participate in more quizzes than girls, but arts, travel and music are the types of leisure or entertainment activities that are more frequently undertaken by girls. This type of behaviour supports the idea of internalised stereotypes based on gender roles, as proposed by Wajcman (2004) and Gill and Grint (1995). Internalisation of social norms is important in determining internet use by girls and is reflected in the findings, since the valence of online confidence and internet image corresponded to what would be expected based on stereotypes. The differences observed between low and high internet status ethnic groups within the girls group suggest that, in addition to social norms, 'internet norms' play a role.

The processes that determine infotainment use differ immensely between social groups and, within these groups, between locations. This suggests that interventions will have different effects depending on the group and the location. Actions that are taken to increase girls' infotainment use will not automatically decrease boys' use, which is perhaps a positive finding because a targeted campaign for girls would probably leave boys' use undisturbed. However, certain actions within one low internet status ethnic group can have opposite effects in another high internet status ethnic group. In addition, double exclusion, such as that found for the disabled African Caribbean teenagers, seems to have additional negative effects and stresses the necessity of targeting interventions to specific groups (see also Alfonso et al. 2001). More research is necessary to disentangle the multiple facets of exclusion in internet use.

It seems that social exclusion based on resources especially plays a role in determining who will undertake entertainment type activities; for information type activities, individualised interventions based on confidence and image of the internet in digitally excluded groups would probably be more appropriate. The question of course is whether it is important in

policy and academic terms to increase entertainment activities by youngsters. Educational scholars have indicated that some of the most effective learning in young children takes place through playing games (Betz 1995; Corbeil 1995; Mumtaz 2001; Nippold 2005; Turvey 2006), although it is not clear that this is also the case for teenagers. However, entertainment use and leisure use go beyond playing games, and it was difficult in this research to separate out information for entertainment uses for this age group. These leisure and entertainment type uses are a link for these teenagers to their peers and to the social world outside. Therefore the question whether it is important to decrease inequalities in entertainment activities between boys and girls, and African Caribbean and other teenagers, needs to be answered in the broader contexts of identity formation, and not just phrased in terms of traditional education or learning.

7.4.4 Different status, different process?

This thesis has focused mainly on model testing and, while the findings can be applied to policy, the important outcome is that interventions need to be group specific. The following generalised answer to Q7.1 based on the internet statuses of the groups should therefore be interpreted with care.

- Those who are advantaged in internet use are not very different in what drives them to use the internet - mainly confidence and image of the internet. Therefore the explanation of internet use by digitally included teenagers is aided by the inclusion of micro frameworks in macro frameworks.
- Those who are considered disadvantaged differ in the processes behind their internet use depending on location and the type of use, but stereotypes and social identification are influential factors. Therefore the inclusion of micro and meso frameworks will aid understanding of the processes behind internet use in digitally excluded groups.

The next chapter will examine whether it is possible to intervene in these processes and change the behaviour of socially excluded groups by varying the contexts in which they use the internet.

8 Changing internet behaviour and attitudes

In previous chapters the relationships between social exclusion and the processes behind internet use were discussed. One of the conclusions was that different contexts, interpreted as the different physical and social contexts in which teenagers use the internet in everyday life, were related to different types of use. Inequalities in internet use at school - one of the physical contexts- were smaller than at home, and school served as an equalising environment for African Caribbean teenagers who were, overall, digitally disadvantaged. Social context measured through anonymity of use was related to less desirable uses at home and in the future, and to more desirable uses at school.

Since a survey measures only naturally (co-)occurring circumstances, it has so far not been possible to draw definite conclusions about whether context is one of the causal factors that determines online behaviours and attitudes, or whether both context and behaviour are related to an underlying variable that causes a spurious correlation. An experiment such as the one described in this chapter can offer a more definite answer to the question of causality by keeping constant all explanatory factors except context, so that any changes in behaviour can be attributed to changes in context.

Theory

Of the theoretical frameworks discussed in Chapter 2, meso and micro frameworks are the best equipped to explain how context might influence behaviour (see also Chapters 5 and 6). Micro frameworks do not offer a direct explanation for the relationship between context and behaviour, but the assumption made by meso frameworks is that changing a person's context will influence the way people see themselves and therefore their behaviour. SIT and self-categorisation theory argue that the reason context changes self-perception is that context determines which group the person sees themselves as part of. The group norms of the activated group are internalised into the person's self-image and the person will behave according to these norms. The interpretation of context used in these meso frameworks is the priming (through experimental manipulation) of a person's identity, so that one of the groups they belong to becomes more prominent as a reference category. This same definition of social context is used in this chapter.

In SIT and CMC studies it is common to focus on how people assigned to low and high status groups interact in an anonymous computer environment. Low status in these contexts is defined as being assigned to a minority group, (through priming) or a group which in society is considered to be of lower internet status[82], for example a woman or ethnic minority group. While SIT and CMC studies focus on interaction with others through computers, the experiment presented in this chapter examines how the activation of high or low status group identities influences general internet use.

The main theoretical question to be answered in this chapter is:

Q8.1 *Can SIT and self-categorisation theories be applied to general internet use?*

Policy

In earlier chapters it was argued that, to form evidence based policy aimed at tackling digital exclusion, it is important to understand whether social context, independent of other factors, can be changed to influence behaviours or attitudes. Although changing a teenager's socio-economic, psychological or societal environment will probably influence their internet use, these types of contexts are relatively difficult to change. Social context, as understood by meso-level theories, can be more easily manipulated by educators, public awareness campaigns and other interventions. It would be of practical interest, therefore, to be able to influence context in such a way that it would bring about positive change in behaviour and attitudes. The most common way of changing context using a meso approach is to change the way in which vulnerable groups are addressed, so that the individuals in these groups change the way they perceive themselves.

The main empirical question addressed in this chapter is:

Q8.2 *Can internet behaviour and attitudes be influenced by changing the social context in which teenagers from vulnerable groups use the internet?*

[82] This status is related to the type of stereotypes that exist about the group in society, negative or positive.

Since vulnerability in the digital inclusion literature is related to lower digital status, internet status was the focus of this experiment's manipulation. The results from the survey confirmed that the girls and African Caribbean teenagers were of lower internet status since they used the internet less frequently and had less private access to it. The boys, the Asian and the White teenagers were more advantaged and could therefore be considered of higher internet status.

Design

In the experiment discussed in this chapter, status was manipulated by varying the way in which the teenagers were addressed (see also section 3.2.3). A teenager was addressed based on his or her ethnicity, gender, age, or in a neutral fashion. A female or an African Caribbean mode of address was assumed to activate low internet status, whilst a high internet status was activated by addressing a teenager as Asian, male or young, and a neutral status by a mode of address based on the person. SIDE argues that group membership and affective commitment are activated by priming one identity (i.e. group membership) over others. In this experiment, this was achieved by addressing the teenager based on one of their identity aspects (gender, ethnicity, age or neutral).

The effect of placing the teenagers in a certain social context, that is the effect of addressing them in a certain way, was measured in relation to five elements: (1) importance of identity (i.e. affective commitment), (2) internet self-efficacy, (3) internet attitudes, (4) internet behaviour and (5) cognitive strategies related to internet behaviour. These were measured for information seeking (browsing) and peer to peer communication, which are the most popular activities amongst teenagers (Livingstone & Bober 2004). Information seeking was tested for human rights and health subjects, both civic interest and thus, according to adults, desirable activities. This selection of dependent variables is based on previous research that considers these the main indicators of digital exclusion (Buckingham 2005; Livingstone, Bober & Helsper 2005b; Ofcom 2006a; Selwyn 2001; Van Dijk 2005). The first element (importance of identity) was introduced not as a digital inclusion indicator, but as a manipulation check which tested the influence of affective commitment, and also served as an independent variable alongside gender and ethnicity of the participant. SIDE and self-categorisation

theories assume that group membership only has an effect on behaviour if there is affective commitment to an identity that is if the group is considered important. The exact experimental procedure is described in the sections that follow.

Procedure

All the participants individually logged in on a website (http://teensonline.lse.ac.uk)[83]. The participants were told that if they had any question regarding the experiment they should raise their hand so that the researcher could answer their question in such a way that the other participants could not eavesdrop on the exchange.

Introduction

The first webpage showed a report attributed to the Greater London Authority that framed internet use in terms of differences between groups in quantity of use. They had to scroll down to be able to click to the next page where they agreed to participate by giving a number and password assigned to their school. They were also asked to give their email address to participate in a raffle for a music voucher. The school had been informed in advance that this information would be treated confidentially and this was repeated on the website and in the verbal instructions.

Demographics

The first page presented the students with questions about themselves (age, gender, ethnicity, place of residence). If they were outside the age range (16 to 19) or lived outside the Greater London Area they were thanked for their participation and told that the project was currently looking for other people to participate.

Priming of group identity (condition)

The participants were then presented with an explanation which varied for the different conditions. In condition 1, the neutral condition, the participants were invited to participate in a research project that was interested in how *people* use the internet, in condition 2 (high status) they were told that this research project was interested in internet use by either *young*

[83] See Appendix III (Experimental script).

people, Asian people or *men* depending on their allocation to the groups and, in condition 3 (low status), they were told that this study was particularly interested in how *African Caribbean people* or *women* used the internet. [84]

After this priming of group identity they were asked to complete the first task which asked them to imagine that they had heard about human rights issues on television. They were given the UN definition of human rights and were then asked to type the search terms into a search engine that they would use to look for information on human rights. The terms they typed in were recorded in the database.

1st task: Browsing for human rights

The following page presented the participants with 10 standardised 'search results'. These were the same no matter which search terms had been typed in by the participants.

The links either referred explicitly to women, Asian, African Caribbean, or young persons, or were neutral in orientation. To make sure that participants did not just choose the first link, the order of the links was randomly changed and they were asked to click on two links. Response time, the content of the link and the position of the link were recorded in the database.

After clicking on the two links they were automatically taken to a new page and asked why they picked the links, how interested they were in human rights issues and also how important human rights issues were for their group. This last question was meant to re-prime their group identity for the next task.

2nd task: Browsing for health

The next task was similar to the first but told them to imagine that they were not feeling well and had vague complaints (fever, headache etc). Again they were asked to type in the search terms that they would use to look for this kind of information online and were presented with

[84] Which possible conditions they could be assigned to depended on their responses in the demographics section.

10 links as a result. After clicking on two of them they were taken automatically to the next page which asked the same questions as for task 1 but this time in relation to health issues.

3rd task: Chat partner selection

The third task was related to chatting with others online. The page informed the participants that they would be taken to a chat room where a number of people were present and to imagine that they would be interested in talking to someone. They were asked to click on two characters.

The chat page designed by the researchers presented 8 characters; 4 boys on the left side and 4 girls on the right side. They had short descriptions including age and names which were selected to be typical White, Asian or African Caribbean names[85]. The descriptions of hobbies were kept as neutral and similar as possible. There were two additional characters with fictitious names and descriptions that made them seem a bit 'weird' as one of the pilot participants said. After selecting two partners to chat to participants were asked why they picked the first character.

Self-esteem, perceived typical behaviour and attitudes

The last page collected information about participants' self-perception, their perception of the internet, the way in which they usually perform the tasks they were asked to perform, and how high their affective commitment was to different social groups, that is, the experiment asked how important different aspects of their identity were in daily life.

Before and after every task they were primed about the group that they were assigned to which should have kept them aware of their group identity.

Chapter structure

This chapter is divided into five sections which discuss the influence of social context, that is mode of address, for each of the five elements. The following labels were used for the independent variables:

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[85] Source: http://www.babynameworld.com/.

- *Group* refers to the gender and the ethnicity of the teenager (i.e. boy or girl, and Asian, African Caribbean, White or Other).
- *Condition* refers to the mode of address (social context) to which the teenager was assigned (i.e. gender, ethnicity, youth or neutral)

Each section will start by stating the relevant hypotheses, all derived from the following main hypothesis:

H0: Teenagers adapt their behaviour and attitudes to reflect those of the (high or low status) group identity for which they have been primed.

Status based on mode of address

This hypothesis assumes different internet status levels for the different groups depending on the condition they have been placed in; this is depicted in Table 8.1.

Table 8.1 Status of participants in the experiment by group and condition

Condition / Group	Ethnicity	Gender		Youth	Neutral
		Female group	Male group		
African Caribbean	Low	Low	High	High	Neutral
Asian	High	Low	High	High	Neutral
White	n/a	Low	High	High	Neutral

Table 8.1 shows that placing girls in the gender condition was hypothesised to activate internalisation of stereotypes related to low internet status and, when girls were addressed based on their youth, they were hypothesised to adopt high status internet behaviour. The African Caribbean teenagers were expected to show more low status behaviour, and the Asian teenagers more high status behaviour, in the ethnicity condition in comparison to the neutral condition. The definition of high status group norms in relation to specific indicators is further explained in the discussion of the findings and, in general, is interpreted as meaning high self-efficacy, positive attitudes, expert search behaviour (e.g. short search times) and cognitive strategies (e.g. pre-determined strategy). All the teenagers were assumed to be of high status in the youth condition. The neutral condition should therefore cause less stereotypical low status or high status behaviour in comparison to the other conditions.

Analyses

The analyses in this chapter are based on the following rationale: the analyses investigating differences between the boys' and girls' groups focused on comparisons of other conditions with the gender condition, since there is no a-priori hypothesis about how boys addressed based on their ethnicity would differ from those addressed based on their gender. For the same reasons the analyses of the scores of different ethnic groups focused on comparisons of the ethnicity condition with other conditions.

Based on the sample presented in Tables 3.5 and 3.6 (p.115 & p.116), there are a number of further restrictions to the statistical comparisons made in this chapter.[86]

- The gender condition can be compared with the neutral condition (N=82) for all (Asian, African Caribbean and White) the ethnic groups.
- A comparison of the ethnic condition with the neutral (N=72) and gender (N=68) condition had to be restricted to the African Caribbean and the Asian groups, because only Asian and African Caribbean teenagers were assigned to the ethnic condition.
- All comparisons between the neutral and youth (N=81), and gender and youth (N= 77) conditions could not be controlled for ethnicity, because in the youth category there were only teenagers from the Other ethnic group and ethnicity thus did not vary.

The chapter is structured so that for each of the five earlier mentioned elements the scores on different outcome variables are compared:

- First, between the boys' and girls' groups for the gender and the neutral condition in a 2 x 3 x 2 ANOVA (gender x ethnicity x condition), and the gender and the youth condition in a 2 x 2 ANOVA (gender x condition)[87].
- Second, between the African Caribbean and Asian groups for the ethnic and neutral condition through a 2 x 3 x 2 ANOVA (gender x ethnicity x condition).[92]

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[86] There are no missing values in the analyses because all participants had to complete all questions for their data to be registered.

[87] In comparisons with the youth condition, ethnicity was not included as an independent measure since only Other ethnic teenagers had been assigned to the youth condition and ethnicity therefore did not vary in the youth condition (see section 3.2.3.3). For these same reasons, the ethnicity condition was not compared with the youth condition.

- Third, for all the teenagers between the youth and the neutral condition through a 2 x 2 ANOVA (gender x condition).[92]

For all ANOVAs two way interaction effects were calculated to understand whether the effect of condition differed by group gender or ethnicity. This made it possible to test the hypothesis that the effect of social context varies depending on the nature of exclusion, that is on the social group they belong to. For clarity, throughout the chapter, interaction effects are depicted in graphs as well as in the ANOVA Tables. Similarly, to test the assumptions underlying self-categorisation theory, the effect of affective commitment (importance of identity) was tested and entered as an independent variable. The results for the latter analyses are only reported when affective commitment had a significant effect.

Furthermore, differences were found between conditions for which no hypotheses were formulated (i.e. between the gender and ethnicity conditions). These are discussed briefly and illustrated at the end of every section if relevant to the interpretation of results. In the final section of this chapter the implications of these findings for gender and ethnicity will be discussed, as well as the effect of mode of address on these different groups.

Each section that follows discusses the findings according to the above explained scheme for one of the outcome measures.

8.1 Identity

Participants were asked to rate the importance of their group identity (i.e. gender, ethnicity and youth) towards the end of the experiment[88]. This measure served, first, to understand whether the manipulation had led to a greater importance of group identity and, second, whether importance might be the explanation of any differences found between conditions in further analyses.

The following three hypotheses will be tested in this section:

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[88] See Appendix III for the script of the experiment which includes all the tasks and questions.

H8.1: In the gender condition, the importance of gender identity is higher for the boys' and girls' groups than in the neutral and youth conditions.

H8.2: In the ethnicity condition, the importance of ethnic identity is higher for the African Caribbean and Asian groups than in the neutral condition.

H8.3: In the youth condition, the importance of youth identity is higher than in the neutral condition for all the teenagers.

Findings: Importance of gender identity

Table 8.2 tests H8.1 and, in order for this hypothesis to be supported, the main effect of condition (C) should be significant, which means that the importance of gender identity depends on the way in which the teenager was addressed.

Table 8.2 Importance of gender identity: ANOVA comparisons between conditions based on gender group[89] (test H8.1)

	Gender condition compared with...					
	Neutral condition [(a)]			Youth condition[(b)]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	1.91	0.17	1	0.03	0.87
Ethnic group (B)	2	3.07	0.05			
Condition (C)	1	2.46	0.12	1	1.16	0.28
A x C	2	0.20	0.82	1	3.68	0.06
A x B	1	0.00	0.95			
B x C	2	0.16	0.85			
Error	129	(1.64)		130	(-1.39)	

(a) R^2= .92 (Adjusted R^2 = .91). (b) R^2= .93 (Adjusted R^2 = .93).

Note: Comparisons between the gender and youth conditions did not incorporate ethnic group membership as an independent variable because there was no equal distribution of ethnicity over conditions (i.e. the youth condition had only Other ethnicity teenagers and no White, Asian or African Caribbean teenagers).

There were no significant effects of condition, gender or ethnicity on the importance of gender (see Table 8.2). [90]

⇒ Since there were no differences between the gender and neutral nor between the gender and youth condition in the importance of gender identity, *H8.1* is rejected.

[89] There were no empty cells in any of the analyses in this chapter because the participants had to answer each question to be able to proceed to the end. Therefore type III ANOVAs were considered appropriate for all analyses.

[90] See Appendix IX for all means scores on variables in the experiment.

Findings: Importance of ethnic identity

Table 8.3 tests hypothesis H8.2 which assumes that the main effect of condition (C) is significant.[91]

Table 8.3 Importance of ethnic identity: ANOVA comparison between conditions based on ethnic group (test H8.2)

	Ethnicity-Neutral conditions comparison		
Independent variable	*df*	*F*	*p*
Gender group (A)	1	0.33	0.57
Ethnic group (B)	1	4.15	0.05
Condition (C)	1	0.32	0.57
A x B	1	0.13	0.72
A x C	1	1.97	0.17
B x C	1	0.58	0.45
Error	48	(1.74)	

R^2= .91 (Adjusted R^2=.90).
Note: Comparisons between modes of address incorporated only the Asian and African Caribbean teenagers.

Table 8.3 shows a main effect of ethnicity on the importance of ethnic identity, but no effect of condition or gender. The *African Caribbean* group considered their ethnicity to be more important (av=4.6) than the *Asian* group (av=3.9).

⇒ Since condition had no effect on the importance of ethnic identity within ethnic groups, *H8.2* is rejected.

Findings: Importance of youth identity

Table 8.4 tests hypothesis H8.3 which assumes that the main effect of condition (C) is significant in comparisons between the youth and neutral modes of address.

[91] As explained in sections 3.2.3 and on p.295 ethnic groups could not be compared across conditions since no AC, AS or White teenagers were assigned to the youth condition (only Other ethnicity teenagers were).

Table 8.4 Importance of age: ANOVA comparison (all) based on youth (test H8.3)[92]

	Youth-Neutral comparison		
Independent variables	*df*	*F*	*p*
Gender group (A)	1	4.24	0.04
Condition (B)	1	0.61	0.44
A x B	1	0.54	0.46
Error	77	(1.46)	

R^2= .07 (Adjusted R^2 = .03).

Note: Ethnicity could not be incorporated in this ANOVA, since only the Other ethnicity teenagers participated in the Youth condition, and only the African Caribbean, Asian, and White teenagers participated in the neutral condition.

Table 8.4 shows that gender influenced how important youth was to the teenagers; the girls thought that being young was more important (av=3.8) than boys (av=3.2). However, no main effect of condition on the importance of youth identity was found.

⇒ Since there was no difference between the youth and neutral conditions in the importance of youth, *H8.3* is rejected.

In summary, these findings indicate that mode of address did not influence the general importance of different identity aspects. In other words, addressing teenagers online in terms of either their gender, ethnicity or age does not influence their perception of the importance of this aspect of their identity.

8.2 Internet self-efficacy

High self-efficacy has been shown in previous research to be a characteristic of high status groups (Bandura 1996, 2003; Durndell & Haag 2002; Eastin & LaRose 2000; Van Dijk 2005). The teenagers were therefore expected to have lower levels of internet self-efficacy if they were addressed as a member of a low internet status group (i.e. girl or African Caribbean), and higher when addressed as a member of a high internet status group (i.e. boy, Asian or Young).

The two internet self-efficacy measures (Q15 and Q22[93]) were summed into one measure with a scale from 2 to 9 (from beginner to expert) and tested the following hypotheses:

[92] For comparisons between the youth and gender conditions see Table 8.2(b).

H8.4: The girls have lower levels of self-efficacy in the gender than in the neutral condition, and vice versa for the boys.

H8.5 The girls have higher levels of self-efficacy, and the boys have equal levels of self-efficacy, in the youth as in the gender condition.

H8.6: The African Caribbean teenagers have lower levels of self-efficacy in the ethnicity than in the neutral condition, and vice versa for the Asian group.

H8.7: The teenagers have higher self-efficacy levels in the youth than in the neutral condition.

Findings: Internet self-efficacy

To support H8.4 and H8.5 the interaction effect of gender (A) and condition (C) in Table 8.5 had to be significant, since this would indicate that the effect of condition differed between the boys and girls and that, therefore, the boys could have higher scores in the gender condition and girls lower scores. There should be no difference between the gender groups in the neutral condition.

Table 8.5 Internet self-efficacy: ANOVA comparison between conditions based on gender group (test H8.4 & H8.5)

	Gender condition compared with...					
	Neutral condition [(a)]			Youth condition[(b)]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p.*
Gender group (A)	1	1.55	0.21	1	26.33	0.00
Ethnic group (B)	2	0.59	0.56			
Condition (C)	1	0.18	0.67	1	0.53	0.47
A x B	2	0.34	0.71			
A x C	1	1.85	0.18	1	3.62	0.06
B x C	2	0.04	0.96			
Error	129	(1.98)		130	(1.82)	

a) R2 = .96 (Adjusted R^2 = .95). b) R^2= .96 (Adjusted R^2= .96).

Table 8.5 shows that there was a main effect of gender the girls had lower self-efficacy levels (av=5.95) than the boys (av=6.58). This is an interesting findings, since it confirms findings by Wajcman (2004) that women fairly consistently perceive themselves as less skilled in computer based technologies than men (see also McIlroy, Bunting, Tierney & Gordon 2001;

[93] See Appendix III (Experimental script).

Ono & Zavodny 2003). These gender differences did not appear in the gender–neutral condition comparison (which did not contain teenagers of the Other ethnic groups). While the effect of gender is interesting in itself, it is more important for the hypothesis tested in this thesis that mode of address had no significant effect on self-efficacy levels in the comparison between gender and other conditions.

⇒ Since there was no significant interaction effect between condition and gender on the self-efficacy levels of the girls or boys, *H8.4* and *H8.5* are rejected.

Table 8.6 Internet self-efficacy: ANOVA comparison between conditions based on ethnic group (test H8.6)

	Ethnicity-Neutral condition comparison		
Independent variables	*df*	*F*	*p*
Gender group (A)	1	0.44	0.51
Ethnic group (B)	1	0.12	0.73
Condition (C)	1	0.40	0.53
A x B	1	0.50	0.48
A x C	1	0.00	0.99
B x C	1	2.51	0.12
Error	48	(2.00)	

a) R^2= .96 (Adjusted R^2= .95)

As shown in Table 8.6 there were no interaction or main effects of ethnicity (B) and mode of address (C) when comparing the ethnicity and neutral conditions.

⇒ Since there was no interaction effect between condition and ethnicity on self-efficacy levels, *H8.6* is rejected.

Table 8.7 Internet self-efficacy: ANOVA comparison between conditions based on youth (test H8.7)

	Youth - Neutral condition comparison		
Independent variables	*df*	*F*	*p*
Gender group (A)	1	6.80	0.01
Condition (B)	1	0.75	0.39
A x B	1	5.27	0.02
Error	77	2.82	

R^2= .94 (Adjusted R^2= .94).

Table 8.7 shows that there is a main effect of gender when comparing the youth and the neutral condition but, in addition, there is an interaction between condition and gender. Table 8.5[(b)] above showed a similar trend. These interaction effects are depicted in Figure 8.1.

Figure 8.1 Internet self efficacy: Interaction between gender group and condition

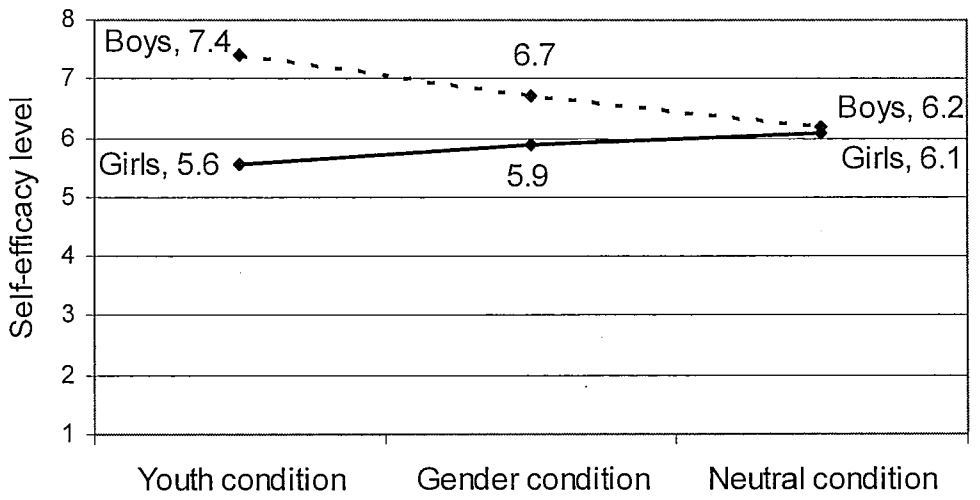

Figure 8.1 shows that the boys were less confident when addressed neutrally than when they were addressed as boys or young people. In contrast, the girls were more confident when addressed neutrally than when addressed as girls or young people. Although the boys in general had higher self-efficacy levels than the girls, there were no differences between the boys and girls when both were addressed neutrally. The effect of addressing these teenagers as young people is unexpected, since boys and girls were expected to have similar levels of (high) self-efficacy in the youth condition. The results presented in the rest of this chapter suggest that this might be explained, firstly, by teenagers using their peers, instead of older generations, as the reference category in this condition; and, secondly, by the fact that this condition exacerbated stereotypical gender differences more than explicitly addressing teenagers based on their gender.

⇒ Since only the boys felt more confident when addressed as young than when they were addressed in a neutral fashion, *H8.7* can be supported for the boys but is rejected for the girls.

Summary: Internet self-efficacy

The findings showed that the girls had lower levels of self-efficacy than the boys independent of the way in which they were addressed. Although mode of address did seem to have an effect in the expected direction on the self-efficacy levels of the boys, this could not be confirmed for the girls. The girls were more confident in a condition (gender) that was considered to be of low status than one (youth) that was considered to be of high status although, they had the highest levels of self-efficacy (equal to those of the boys) in the neutral condition. The boys, however, had the lowest reported levels of internet self-efficacy in this neutral condition and higher levels of self-efficacy in the high status (youth and gender) conditions. Mode of address had no influence on the levels of internet self-efficacy of the different ethnic groups.

8.3 Internet attitudes

Nine internet attitudes were grouped into the following three scales based on a factor analysis of Q16 in the experiment[94]: *'Awe for the internet'*, *'Frustration with the internet'* and *'The internet is a social safe place'*[95]. The literature suggests that high status internet users have more positives attitudes towards the internet (Brosnan & Lee 1998; Durndell & Haag 2002; Harris 1999; Owen et al. 2003).

These scales were constructed to test the following hypotheses:

H8.8: The girls' group has less positive attitudes towards the internet in the gender condition than in the neutral and youth conditions.

H8.9: The African Caribbean group has less positive attitudes towards the internet in the ethnicity condition than in the neutral condition, and vice versa for the Asian group.

H8.10: The teenagers have more positive attitudes towards the internet in the youth condition than in the neutral condition.

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[94] see Appendix X - Table 4.

[95] The first attitude scale based on the experimental data is a combination of the 'the internet is awe inspiring' and 'the internet is life enhancing' scales found in the survey; the second 'frustration' scale in the experiment is equal to the one found in the survey and the third consists of two items not measured in the survey.

Findings: Internet attitudes

When comparisons were made with the gender condition, significant effects of group gender and condition were found for the frustration attitude. There were no effects of either gender or condition on the attitudes in relation to awe for the internet or the belief that the internet is a social safe place. Therefore the analyses of the findings based on gender further explore the effect of condition and gender on the 'frustration with the internet' attitude (see Table 8.8).

Table 8.8 Frustration with the internet: ANOVA comparisons based on gender group (test H8.8)

	Gender condition compared with...					
	Neutral condition [a]			Youth condition[b]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	1.57	0.21	1	4.87	0.03
Ethnicity group (B)	2	0.62	0.54			
Condition (C)	1	1.58	0.21	1	0.21	0.65
A x B	2	0.63	0.53			
A x C	1	0.57	0.45	1	0.00	0.95
B x C	2	0.17	0.84			
Error	129	(3.13)		130	(2.81)	

a) R^2 = .89 (Adjusted R^2= .89). b) R^2 = .89 (Adjusted R^2=-.89).

Table 8.8 shows that, irrespective of condition, the girls were on average (av=5.2) more frustrated with the internet than the boys (av=4.5). In other words, there was a main effect of group gender when the gender condition was compared with the youth condition (therefore including the teenagers with Other ethnic identity). To support H8.8 there should have been an interaction between condition (C) and gender (A).

⇒ Since there was no interaction effect between condition and gender on the internet attitudes of the boys or girls, *H8.8* is rejected.

Table 8.9 shows the ANOVA Tables for the comparisons for all attitudes between the ethnic and neutral conditions.

Table 8.9 Internet attitudes: ANOVA comparisons between ethnic and neutral conditions based on ethnic group (test H8.9)

	Awe[a]			Frustration[b]			Social Safe Place[c]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.18	0.67	1	0.46	0.50	1	1.90	0.17
Ethnicity group (B)	1	0.61	0.44	1	0.00	0.95	1	0.56	0.46
Condition (C)	1	0.11	0.74	1	0.05	0.83	1	2.05	0.16
A x B	1	0.42	0.52	1	0.02	0.90	1	0.09	0.77
A x C	1	0.80	0.38	1	0.94	0.34	1	0.13	0.72
B x C	1	0.05	0.83	1	0.00	0.95	1	0.00	0.96
Error	48	(15.65)		48	(4.81)		48	(4.10)	

a) R^2= .96 (Adjusted R^2= .96). b) R^2= .87 (Adjusted R^2= .85). c) R^2= .88 (Adjusted R^2=.86).

The teenagers from different ethnic groups did not differ in their attitudes, nor did mode of address have an effect when the ethnicity and neutral conditions were compared (see Table 8.9).

⇒ Since there were no interaction effects of condition and ethnic group on the attitudes of teenagers from different ethnic groups, *H8.9* is rejected.

Table 8.10 Attitudes: ANOVA condition comparison based on youth (test H8.10)

	Youth – Neutral condition comparison								
	Awe[a]			Frustration[b]			Social Safe Place[c]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.06	0.81	1	0.83	0.37	1	2.35	0.13
Condition (B)	1	0.00	0.97	1	1.15	0.29	1	0.05	0.83
A x B	1	1.00	0.32	1	0.56	0.46	1	0.34	0.56
Error	77	15.10		77	3.53		77	4.70	

a) R^2= .96 (Adjusted R^2= .96). b) R^2= .88 (Adjusted R^2= -.87). c) R^2= .86 (Adjusted R^2= .87).

H8.10 assumes a main effect of being addressed as a young person, which was expected to activate a high status in the teenagers and result in more positive attitudes.

⇒ Since Table 8.10 shows that there was no main effect of the youth condition on the attitudes of the teenagers, *H8.10* is rejected.

Summary: Internet attitudes

There was evidence of a difference in attitudes between the boys and girls: the girls were more negative in their attitudes towards the internet. However, the hypothesis that attitudes

could be improved by addressing the teenagers in a certain (high status) way has to be rejected, since there were no main or interaction effects of condition on internet attitudes.

8.4 Observed behaviour

The findings in relation to behaviour will be presented for *selection times, search behaviour*, and *chat behaviour*. Earlier research (Holscher 2000; Rumpradit 1998) shows that the search behaviour of expert internet users has the following characteristics: they click through faster and have well defined search strategies. In addition, Social Identity Theory and self-categorisation theory would predict that, if group membership is activated, the teenagers select links and chat partners who are part of the same group (Appiah 2003; Jetten et al. 2001; Thurlow et al. 2004). One could perhaps also expect this to mean that the people the teenagers say they chat with regularly are part of their immediate community (i.e. not strangers or friends who live far away).

There were a number of measures related to online behaviour which covered different aspects of behaviour, to make sure that a range of possible indicators of high status, low status and group normative behaviours were included. There were two information seeking measures, one of which asked the participants to look for information on human rights[96] and the other to look for information on health[97], and a third interaction measure which asked them to pick people to chat to in a chat room based on their avatar and their profile[98]. In all instances two links, or two partners, were selected. For the first link and the first partner the selection times were measured. These times were averaged to calculate an average search time for searching and chatting.

The information search links were grouped according to the references they made to certain groups (women, ethnic minorities, neutral and children categories). In each category, for each search assignment, there were two possible choices. So they could click on, for example, two health links which both referred to women, or one link that referred to women and one link

[96] See Appendix III - Step 2: Assignment 1.
[97] See Appendix III - Step 2: Assignment 2.
[98] See Appendix III - Step 2: Assignment 3.

that referred to young people. Since squared multiple correlations showed that the type of link selected for the human rights and the health assignments tended to be very similar, they were combined, leading to four search scales (gender, ethnicity, neutral and young) that ran from 0 to 4. On these scales a score of 0 meant they did not select that type of link for either of the two search assignments and a score of 4 meant they selected 2 of these types of links for both the human rights and the health search assignment.

A similar strategy was applied to the chat assignment, only there the links selected were classified as female, Asian, African Caribbean, or youth related or as neutral.

8.4.1 Selection times

Based on the findings of earlier research (Holscher 2000; Rumpradit 1998), the following hypotheses were posed in relation to the speed of selecting links and chat partners:

H8.11: The girls' group select links and partners slower in the gender condition than in the neutral and youth conditions, and vice versa for the boys.

H8.12: The African Caribbean teenagers select links slower in the ethnicity than in the neutral condition, and vice versa for the Asian teenagers.

H8.13: The teenagers select links faster in the youth than in the neutral condition.

Findings: Selection times

Table 8.11 Selection time: ANOVA condition comparisons based on gender group (test H8.11)

	Gender condition compared with...					
	Neutral condition [a]			Youth condition[b]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	1.96	0.16	1	13.38	0.00
Ethnicity group (B)	2	0.29	0.75			
Condition (C)	1	0.00	0.99	1	0.00	0.97
A x B	1	0.63	0.43	1	0.00	0.95
A x C	2	0.62	0.54			
B x C	2	2.68	0.07			
Error	129	(219.70)		130	(167)	

a) $R^2 = .70$ (Adjusted $R^2 = .68$). b)$R^2 = .73$ (Adjusted $R^2 = .73$).

Table 8.11 shows there was a main effect of gender on selection times when the Other ethnic groups were included in the analysis (i.e. in the gender-youth condition comparison): the

girls were on average slower (av=26.0sec) than the boys (av=16.9sec) in selecting links.[99] However, there was no main or interaction effect of condition on the selection times of webpage links or chat partners. Based on H8.11, the girls were expected to have slower reaction times in the gender condition, and the boys in the neutral condition.

⇒ Since there was no interaction effect of condition and gender on the selection times of the boys and girls, *H8.11* is rejected.

Table 8.12 Selection times: ANOVA condition comparisons based on ethnicity group and youth (test H8.12 and H8.13)

	Comparison neutral condition with...					
	Ethnicity condition [(a)]			Youth condition[(b)]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.13	0.72	1	1.62	0.21
Ethnicity group (B)	1	0.42	0.52			
Condition (C)	1	0.48	0.49	1	0.06	0.81
A x B	1	1.58	0.22	1	1.60	0.21
A x C	1	0.05	0.83			
B x C	1	0.07	0.79			
Error	48	(254.12)		77	(269.64)	

a) R^2 = .69 (Adjusted R^2= .63). b) R^2= .65 (Adjusted R^2 = .63).

Table 8.12 shows that there were no main or interaction effects of condition when the ethnicity condition was compared with the neutral condition, nor when the neutral and youth conditions were compared.

⇒ Since condition did not have an interaction effect on the selection times for the teenagers of ethnic minorities, nor a main effect when neutral with youth conditions were compared, *H8.12* and *H8.13* are rejected.

8.4.2 Search behaviour

Based on SIT theory, which states that activation of group membership will lead people to prefer group members and sources from the in-group (Jetten et al. 2001; Platow et al. 2000; Thurlow et al. 2004, see Flanagin & Metzger 2003 for opposite effect of gender), the following hypotheses were posed in relation to search behaviour:

[99] Detailed analyses showed that, for both health and chat searches, there was a gender effect on the search times and, for the health search times, there was an interaction effect between condition and gender. In the gender condition they were similar, while in the youth condition the boys were faster in selecting a link than the girls.

H8.14: The girls' group selects more, and the boys less, female-related links in the gender condition than in the neutral or youth conditions.

H8.15: The Asian and African Caribbean teenagers select more ethnic minority-related links in the ethnicity than in the neutral condition.

H8.16: The teenagers select more young people-related links in the youth condition than in the gender condition.

Findings: Search behaviour

Table 8.13 Female-related link selection behaviour: ANOVA condition comparisons based on gender group (test H8.14)

	Comparison gender condition with...					
	Neutral condition[a]			Youth condition[b]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	6.59	0.01	1	2.60	0.11
Ethnicity group (B)	2	2.31	0.10			
Condition (C)	1	0.14	0.71	1	2.16	0.14
A x B	2	0.26	0.77			
A x C	1	0.58	0.45	1	0.29	0.59
B x C	2	1.40	0.25			
Error	129	(0.45)		130	0.46	

a) $R^2 = .47$ (Adjusted $R^2 = .43$). b) $R^2 = .42$ (Adjusted $R^2 = .40$).

Table 8.13 shows that there was a main effect of group gender on the types of links selected: the girls (av=.40) were less likely to select links referring to women or girls than the boys (av=.65). There was no difference in the search behaviour of the boys or girls related to the way in which they were addressed.

⇒ Since there was no interaction effect of condition and gender on female-related link selection by the boys and girls, *H8.14* is rejected.

Table 8.14 Ethnic minority-related link selection behaviour: ANOVA condition comparisons based on ethnic group (test H8.15)

	Ethnicity -Neutral condition comparison		
Independent variables	*df*	*F*	*P*
Gender group (A)	1	0.09	0.77
Ethnicity group (B)	1	5.25	0.03
Condition (C)	1	0.29	0.59
A x B	1	1.17	0.29
A x C	1	0.10	0.76
B x C	1	1.27	0.27
Error	48	(0.80)	

R^2 = .83 (Adjusted R^2=.81).

Table 8.14 shows that on average the Asian teens were more likely to select ethnic minority links (av=2.1) than the African Caribbean teens (av=1.3). However, there was no main or interaction effect of condition on the selection of ethnic minority links, contrary to what would have been expected based on H8.15.

⇒ Since both ethnic groups selected a similar number of ethnic minority-related links in the ethnicity condition as in the neutral condition, *H8.15* is rejected.

Table 8.15 Youth-related link selection: ANOVA condition comparison based on youth (test H8.16)

	Youth - Neutral condition comparison		
Independent variables	*df*	*F*	*p*
Gender group (A)	1	0.33	0.57
Condition (B)	1	5.79	0.02
A x B	1	1.18	0.28
Error	77	(0.47)	

R^2 = .48 (Adjusted R^2 = .45).

Table 8.15 shows that there was a main effect of condition on the selection of youth links. In the youth condition the teenagers were more likely to select youth links (av=.79) than in the neutral condition (av=.44). There were no other main or interaction effects.

⇒ Since, in the youth condition, more youth links were selected, *H8.16* can be supported.

Unexpected findings: Search behaviour

As indicated in the introduction to this chapter, it was not possible to hypothesise based on the general internet status (H0) hypothesis, whether there would be a difference between the gender and ethnicity conditions. In an exploratory fashion, these analyses were conducted for identity, self-efficacy and attitudes, but there were indeed no significant differences between the gender and ethnicity conditions for these variables and, therefore, these analyses were not reported. In the selection of webpage links a difference could be hypothesised, based on SIT framework ideas of in-group source preference.

This can be translated into two alternative hypotheses for the comparison between the ethnicity and gender conditions, based on the same reasoning as applied in H8.14 to H8.15:
H8.14b: The girls select more female links in the gender condition than in the ethnicity condition.
H8.15b: The Asian and African Caribbean teenagers select more ethnic minority-related links in the ethnicity than in the gender condition.

Table 8.16 Selection of ethnic minority–related links: ANOVA gender-ethnicity condition comparison (test H8.14b and H8.15b)

	Ethnic minority-related link selection[(a)]			Female-related link selection[(b)]		
Independent variables	*df*	*F*	*p.*	*df*	*F*	*p.*
Gender group (A)	1	0.55	0.46	1	0.02	0.89
Ethnicity group (B)	1	10.84	0.00	1	3.76	0.06
Condition (C)	1	0.26	0.61	1	0.03	0.86
A x B	1	1.76	0.19	1	0.68	0.41
A x C	1	4.03	0.05	1	1.68	0.20
B x C	1	0.82	0.37	1	0.39	0.53
Error	77	(0.73)		77	(0.51)	

a) R^2 = .82 (Adjusted R^2= .81). b) R^2= .44 (Adjusted R^2= .38).

Table 8.16 shows that there was a main and interaction effect of ethnicity and condition on the selection of ethnic minority links. The main effect of ethnicity indicates that the Asian teenagers were more likely to select ethnic minority-related links (average over all conditions=1.9) than the African Caribbean teenagers (av=1.4) and further analyses indicate

that they were more likely to select ethnic minority links than the White teenagers (av=1.7). Figure 8.2 depicts the interaction effect in Table 8.16(a).

Figure 8.2 Selection of ethnic minority links: Interaction between ethnicity and condition[100] (test H8.15b)

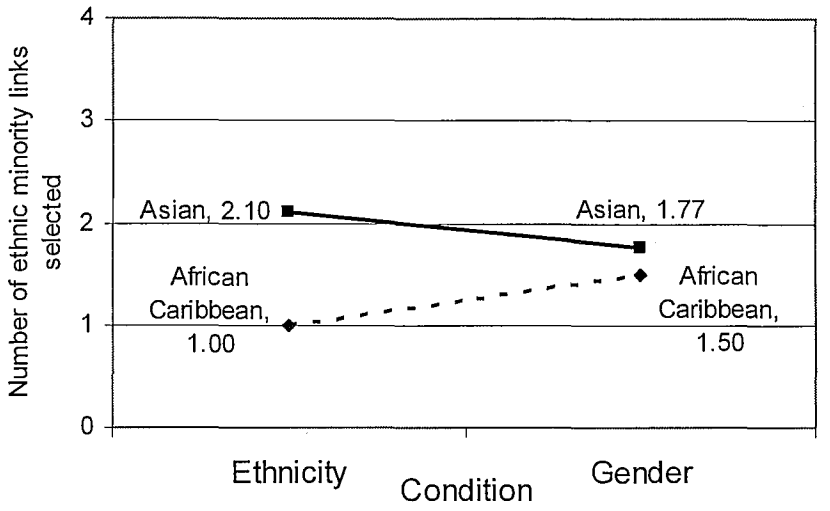

Figure 8.2 shows that the Asian group selected more ethnic minority-related links in the ethnicity condition (av=2.1) than in the gender condition (av=1.8), while the African Caribbean teenagers reacted in exactly the opposite way (av=1.0 ethnic minority-related links in the ethnicity condition, av=1.5 in the gender condition) to mode of address.

⇒ Since more ethnic minority-related links were selected by the Asian teenagers in the ethnicity condition than in the gender condition, *H8.15b* can be supported for the high internet status Asian group.

⇒ Since the low internet status African Caribbean teenagers selected more ethnic minority-related links in the gender than in the ethnicity condition, *H8.15b* is rejected for this group.

There was no effect of condition or gender for female-related links (see Table 8.16(b)).

⇒ Since the same number of female-related links was selected by the teenagers in the gender as in the ethnicity condition, *H8.14b* is rejected.

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[100] Only the Asian and African Caribbean groups are depicted, because the White teenagers were not assigned to, and thus have no score in, the ethnicity condition.

8.4.3 Chat partner selection

Based on SIT, similar hypotheses to those formulated for link selection behaviour (see section 8.4.2) were formulated for chat behaviour:

H8.17: The teenagers are more likely to select same sex chat partners in the gender than in the neutral and youth conditions.

H8.18: The teenagers are more likely to select same ethnicity chat partners in the ethnicity than in the neutral condition.

Findings: Chat partner selection

Table 8.17 Gender of chat partner selected: ANOVA condition comparison based on gender group (test H8.17)

	Comparison gender condition with...					
	Neutral condition[a]			Youth condition [b]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	5.43	0.02	1	0.57	0.45
Ethnicity group (B)	2	2.24	0.11			
Condition (C)	1	2.27	0.13	1	0.07	0.79
A x B	2	0.62	0.54			
A x C	1	0.00	0.95	1	0.82	0.37
B x C	2	0.28	0.76			
Error	129	(0.56)		130	(0.60)	

a) $R^2 = .75$ (Adjusted $R^2 = .73$) b) $R^2 = .74$ (Adjusted $R^2 = .73$)

Table 8.17 shows that there was a main effect of gender on chat partner selection. The girls were less likely to select a female chat partner (av=1.1), and therefore more likely to select a male chat partner, than the boys (av=1.3). Condition did not influence the gender of the chat partner selected.

⇒ Since there was no main effect of condition on the gender of the selected chat partners, *H8.17* is rejected.

Table 8.18 Ethnicity of chat partner selected: ANOVA condition comparison based on ethnic group (test H8.18)

	Ethnicity-Neutral condition comparison					
	Asian chat partner[(a)]			African Caribbean chat partner[(b)]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.57	0.45	1	4.73	0.03
Ethnicity group (B)	1	0.38	0.54	1	0.44	0.51
Condition (C)	1	3.60	0.06	1	1.66	0.20
A x B	1	0.10	0.76	1	1.17	0.28
A x C	1	0.29	0.59	1	0.17	0.68
B x C	1	0.74	0.39	1	2.11	0.15
Error	48	(0.49)		48	(0.26)	

a) $R^2 = .66$ (Adjusted $R^2 = .60$). b)$R^2 = .38$ (Adjusted $R^2 = .29$).

Table 8.18 shows that there were no main or interaction effects on the selection of an Asian partner, but there was a main effect of gender on the selection of an African Caribbean chat partner. The puzzling result was that the girls were more likely to select African Caribbean partners (av=.41) than the boys (av=.10). This might have been caused by the attractiveness of the avatar which the participants could have considered higher for the boy than the girl character.

⇒ Since there was no effect of condition on the ethnicity of the chat partner selected, *H8.18* is rejected.

Unexpected findings: Chat partner selection

Further exploration of the unexpected difference between the boys and girls through (un-hypothesised) ethnicity and gender condition comparisons showed equally puzzling effects of gender on the ethnicity of the selected chat partner (see Table 8.19).

Table 8.19 Ethnicity and gender of chat partner: ANOVA condition comparison based on ethnic and gender groups (test H8.17 & H8.18)

	Gender-Ethnicity condition comparison					
	African Caribbean chat partner selection[(a)]			Female chat partner selection[(b)]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	4.74	0.03	1	11.37	0.00
Ethnicity group (B)	1	9.31	0.00	1	0.89	0.35
Condition (C)	1	0.00	0.99	1	1.99	0.16
A x B	1	1.41	0.24	1	0.75	0.39
A x C	1	0.00	0.96	1	0.14	0.71
B x C	1	0.11	0.74	1	0.01	0.93
Error	77	(0.25)		77	(0.43)	

a) $R^2 = .39$ (Adjusted $R^2 = .34$). b)$R^2 = .83$ (Adjusted $R^2 = .82$).

Table 8.19 confirms that there was a main effect of gender on the selection of the chat partner's gender. The girls were less likely to select a female (av=1.3), and more likely to select an African Caribbean, chat partner (av=0.4) than the boys (av=1.6 & av=0.2). In addition there was a main effect of ethnicity on the ethnicity of the chat partner selected: the African Caribbean teenagers were more likely to select an African Caribbean chat partner (av=0.6) than the Asian teenagers (av=0.2).

No similar significant effects were found for the selection of White or Asian chat partners although the tendency was for the Asian teenagers to select Asian chat partners and the White teenagers to select White chat partners. However, there was again no effect of mode of address.

⇒ Since there was no difference between the gender and ethnicity conditions in the gender or ethnicity of the chat partners that teenagers selected, *H8.17* and *H8.18* are rejected for this comparison.

Comment on the importance of identity and observed behaviour

In the introduction to this chapter, self-categorisation theory was shown to argue that the effect of social context (i.e. mode of address and group membership) will only have an effect if there is affective commitment to the group. Therefore the effect of affective commitment on the relationship between group and condition was tested for behavioural aspects in this experiment. The measure of affective commitment, that is importance of group identity,

influenced the findings for neither self-efficacy nor internet attitudes, and were therefore not presented. However, affective commitment to a gender category did influence the effect of condition on actual behaviour and this is discussed below. No effects were found for affective commitment to the ethnic or youth identity categories.

Table 8.20 shows the comparison between the gender and neutral conditions, where the effect of affective commitment was found when a three way interaction between gender (A), condition (C) and affective commitment (D) was included in the analysis.

Table 8.20 Female link and chat partner selection: ANOVA condition comparisons based on gender group (test H8.14 & H8.17)

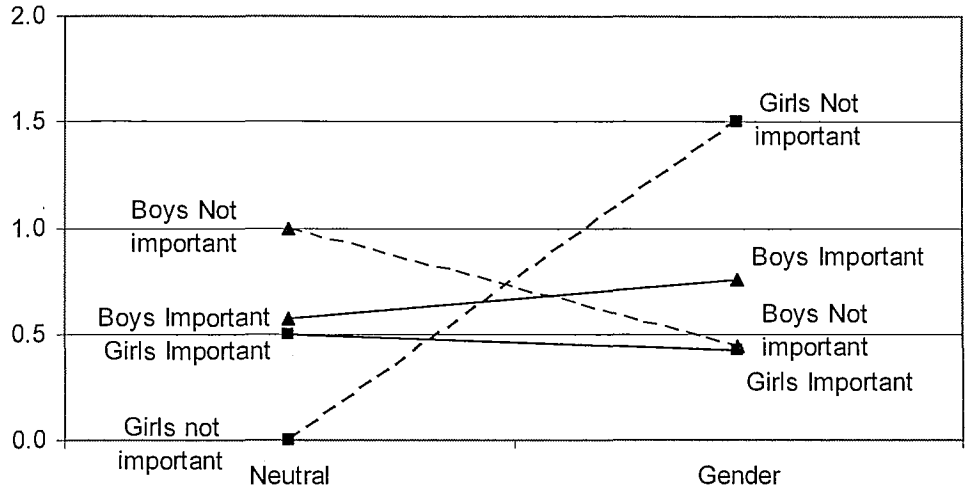
	Gender - Neutral condition comparison					
	Female-related link selection[(a)]			Female chat partner selection[(b)]		
Independent variables	*df*	*F*	*p.*	*df*	*F*	*p.*
Gender group (A)	1	5.60	0.02	1	5.45	0.02
Ethnicity group (B)	2	0.88	0.42	2	2.15	0.12
Condition (C)	1	2.89	0.09	1	7.24	0.01
Importance gender (D)	2	0.55	0.58	2	1.22	0.30
A x C	1	4.85	0.03	1	1.09	0.30
B x C	2	1.63	0.20	2	0.22	0.80
A x C x D	4	3.26	0.01	4	0.95	0.44
B x C x D	5	0.51	0.77	5	0.62	0.68
Error	118	(0.44)		118	(0.58)	

a) $R^2 = .53$ (Adjusted $R^2 = .44$). b)$R^2 = .76$ (Adjusted $R^2 = .72$).

Table 8.20(a) shows that the interaction effect of gender and condition on female-related link selection (see Table 8.13(a)) was influenced by the level of affective commitment (D) that the teenager had to their gender group.

Figure 8.3 depicts this relation graphically for those teenagers who considered their gender important (scores 4 and 5 on original scale, Q21) and for those who considered their gender not important (scores 1 and 2 on original scale).

Figure 8.3 Female-related link selection by gender, condition and affective commitment to gender group (test H8.14 & H8.17)



Base. Teenagers who considered gender important or unimportant (N=173).

High affective commitment

Figure 8.3 shows that the boys and girls who thought their gender was important selected a similar number of female-related links in the neutral condition (av=.50 v av=.57) but, in the gender condition, there was a significant difference between the boys and girls ($F_{(1,73)}$= 4.01, p=.047). The girls who had high affective commitment selected an equal number of female-related links in the gender and neutral conditions (av=.46). In contrast, the boys with high affective commitment selected more female-related links in the gender (av=.76) than in the neutral (av=.57) condition.

Low affective commitment

The effects of condition on female-related link selection for the boys who thought their gender was not important were opposite to those for the girls who thought their gender was not important. The girls for whom gender was *not* important selected more female-related links (av=1.5) in the gender condition than in the neutral condition (av=0.0), while the boys selected less female-related links in the gender (av=.44) than in the neutral condition (av=1.0).

H8.14 assumed that addressing the teenagers based on their gender makes them more likely to select same sex (i.e. in-group) related links.

⇒ Since the girls with high affective commitment to their gender group selected an equal number of same sex-related links, and the boys selected more opposite sex-related links in the gender than in the neutral condition, *H8.14* is rejected for the teenagers for whom their gender is important.

⇒ Since the teenagers with low affective commitment to their gender group selected more same, and less opposite, sex-related links in the gendered condition than in the neutral condition, *H8.14* can be supported for the teenagers who do not attach high importance to their gender.

Table 8.20(b) shows that affective commitment to gender hides the effect of condition on female chat partner selection (absent in Table 8.17). When importance of gender was controlled for (as in Table 8.20b) the teenagers were more likely to select a female chat partner in the gender (av=1.3) than in the neutral condition (av=1.0), and the boys on average (av=1.3) were more likely to select female chat partners than the girls (av=1.1).

⇒ Since the girls were more likely to select same sex chat partners in the gender condition, *H8.17* can be supported for the girls (when affective commitment is controlled for).

⇒ Since the boys were more likely to select opposite sex partners in the gender condition, H8.17 is rejected for the boys.

8.4.4 Summary: Behaviour

The conclusion from the wide array of findings presented in this section on behaviour is that, overall, the way in which teenagers are addressed does not influence their search or chat behaviour. The gender and ethnicity of the group had strong main effects and these were relatively insensitive to change in social context. Exceptions were found investigating ethnic minority link selection for the Asian teenagers and the selection of youth links, where mode of address increased the likelihood of selecting in-group related links and chat partners. These interaction effects between group ethnicity and condition support the argument made in previous chapters that it is necessary to separate out different types of behaviour (use) and look at processes within different groups.

Furthermore, affective commitment to gender categories, that is the importance of gender to the teenagers, influences the effect that condition has on different gender groups. Boys and girls who consider their gender to be less important select more same sex-related links when addressed based on their gender than when addressed neutrally, while boys with high affective commitment select more opposite sex-related links in the gender condition. It seems that teenagers are more likely to select opposite sex-partners, although, overall, the preference seems to be for girls, especially when teenagers are addressed based on their gender.

8.5 Cognitive strategies

In addition to measuring behaviour, the experiment also measured whether or not the teenagers changed the cognitive strategies that they used to select links and chat partners, or to justify their normal behaviour depending on the context in which they found themselves. In this section these cognitive strategies are discussed in relation to the following elements: *justification of choice* and *perceived normal behaviour*.

8.5.1 Cognitive strategies for link and chat partner selection

After having selected the links in the search task, and two persons to chat with, the teenagers were asked why they made this choice of link or partner.

Based on research by Navarro-Prieto et al. (1999) and Hoscher and Strube (2000), reasons given for selecting links and partners were classified based on whether they expressed an active awareness of why they made a certain choice, or whether it indicated passive or non rational selection. Active reasoning, according to Holscher, relates to expert behaviour and passive reasoning to novice behaviour. The fixed response options classified a-priori as *active* were 'most relevant', 'most interesting' and 'most reliable', while those classified as *passive* were 'it was the first link' and 'no particular reason'. For the chat task, the *active* reasons were 'I liked the avatar', 'they seemed similar to me', 'they could be friends in real life', 'they could be friends online', and 'they seemed interesting', and the *passive* reasons were 'they were the first to catch my eye', 'I had to choose' and 'no particular reason'.

Based on previous research, girls are assumed to be more expert in chatting and less expert in searching (Jackson et al. 2001); therefore the following hypotheses were formulated:

H8.19: The girls have (a) less active reasons for selecting links and (b) more active reasons for chatting in the gender than in the neutral and youth conditions, and vice versa for the boys.

H8.20: The African Caribbean teenagers have less active reasons for selecting links and chat partners in the ethnicity than in the neutral condition, and vice versa for the Asian teenagers.

H8.21: The teenagers have more active reasons for selecting links and chat partners in the youth than in the neutral condition.

Findings: Cognitive strategies for choice justification

Table 8.21 Justification for search and chat behaviour: ANOVA condition comparison based on gender group (test H8.19 a & b)

	Gender-Neutral condition comparison											
	Active search reason [a]			Passive search reason [b]			Active chat reason [c]			Passive chat reason [d]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.82	0.37	1	0.91	0.34	1	0.10	0.75	1	0.00	0.99
Ethnicity group (B)	2	0.46	0.63	2	0.64	0.53	2	0.87	0.42	2	1.57	0.21
Condition (C)	1	0.01	0.94	1	0.02	0.89	1	0.17	0.68	1	0.17	0.68
A x B	2	1.00	0.37	2	0.82	0.44	2	0.53	0.59	2	0.84	0.44
A x C	1	0.29	0.59	1	0.03	0.86	1	0.55	0.46	1	0.60	0.44
B x C	2	1.46	0.24	2	1.78	0.17	2	1.98	0.14	2	1.52	0.22
Error	129	(0.56)		129	(0.60)		129	(0.23)		129	(0.22)	

a) R^2=.37 (Adjusted R^2=.31). b) R^2=.79 (Adjusted R^2=.77). c) R^2 =.43 (Adjusted R^2=.38). d) R^2=.64 (Adjusted R^2=.60).

Table 8.21 shows that there were no differences found between the boys and girls for the general search and chat strategies.

A closer inspection of the comparison between the youth and neutral conditions showed that, for the option of 'most interesting' as a reason for selecting a human rights link, there was a significant interaction between gender and condition ($F_{(1,139)}$=4.04, p=.04, not in table). This interaction is depicted in Figure 8.4.

Figure 8.4 'Most interesting' as reason for link selection: Interaction between gender and condition (test H8.19a)

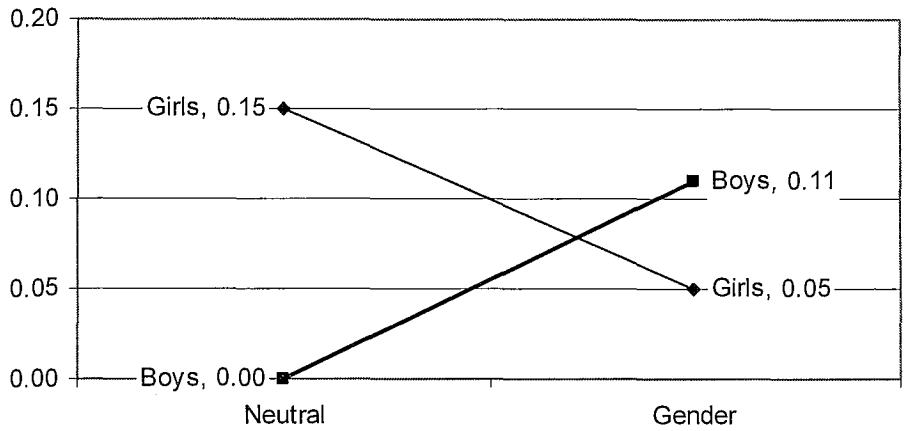


Figure 8.4 shows that the neutral condition girls were more likely than the boys to say they had selected the human rights link because it was interesting but, in the gender condition, the boys were more likely to give this reason for selecting the link (see Figure 8.4). H8.19a predicts that the boys use this active reason more than the girls when both are addressed based on their gender in contrast to when they are addressed neutrally.

⇒ Since the boys had a more active search strategy when they were addressed as boys than when they were in the neutral condition, and since the girls used this active search strategy less when they were addressed as girls, *H8.19(a)* can be supported.

Table 8.22 Justification for search and chat behaviour: ANOVA condition comparison based on gender group (test H8.19a & b)

	Gender-Youth condition comparison											
	Active search reason[(a)]			Passive search reason[(b)]			Active chat reason[(c)]			Passive chat reason[(d)]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.08	0.78	1	0.32	0.57	1	7.84	0.01	1	3.89	0.05
Condition (B)	1	0.42	0.52	1	0.49	0.49	1	2.47	0.12	1	2.21	0.14
A x B	1	2.30	0.13	1	0.79	0.38	1	1.97	0.16	1	0.61	0.44
Error	130	(0.61)		130	(0.67)		130	(0.24)		130	(0.24)	

a) R^2=.34 (Adjusted R^2= .32). b) R^2=.75 (Adjusted R^2=.75). c) R^2=.55 (Adjusted R^2=.54). d) R^2=.45 (Adjusted R^2=.43).

The girls were more likely (av=.63) to use active chat reasons than the boys (av=.43), and the boys were more likely (av=.48) to give passive reasons than the girls (av=.33) (see Table

8.22). There were no interactions between condition and gender for specific strategies when the gender and youth conditions were compared.

⇒ Since there was no interaction effect between gender and condition on the reasons for the link or chat partner selection of the boys or girls, *H8.19(b)* is rejected.

Table 8.23 Justification search and chat behaviour: ANOVA condition comparison based on ethnic group (test H8.20)

	Ethnicity-Neutral condition comparison											
	Active search reason[a]			Passive search reason[b]			Active chat reason[c]			Passive chat reason[d]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.11	0.75	1	0.57	0.46	1	0.25	0.62	1	0.27	0.60
Ethnicity group (B)	1	0.65	0.42	1	0.73	0.40	1	0.01	0.91	1	0.00	0.97
Condition (C)	1	0.18	0.67	1	0.12	0.73	1	0.07	0.79	1	0.13	0.72
A x B	1	0.12	0.73	1	0.01	0.92	1	0.00	0.95	1	0.80	0.37
A x C	1	0.84	0.36	1	0.72	0.40	1	1.28	0.26	1	1.24	0.27
B x C	1	1.29	0.26	1	0.35	0.56	1	0.34	0.56	1	0.02	0.90
Error	48	(0.61)		48	(0.66)		48	(0.25)		48	(0.23)	

a) R^2=.35 (Adjusted R^2=.26). b) R^2=.79 (Adjusted R^2= .75). c) R^2=.66 (Adjusted R^2=.61). d) R^2=.34 (Adjusted R^2=.25).

⇒ Since condition did not influence the reasons for the link or chat partner selection of the Asian or African Caribbean teenagers, *H8.20* is rejected (see Table 8.23).

Table 8.24 Justification for search and chat behaviour: ANOVA condition comparison based on youth (test H8.21)

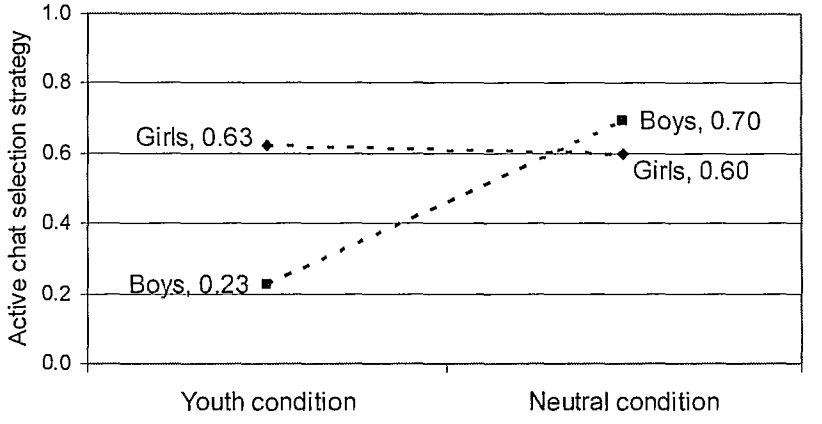
	Youth-Neutral condition comparison											
	Active search reason[a]			Passive search reason[b]			Active chat reason[c]			Passive chat reason[d]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.77	0.38	1	0.12	0.73	1	2.02	0.16	1	0.64	0.43
Condition (B)	1	0.34	0.56	1	0.71	0.40	1	4.35	0.04	1	3.44	0.07
A x B	1	0.04	0.83	1	0.00	0.95	1	5.38	0.02	1	2.63	0.11
Error	77	(0.59)		77	(0.61)		77	(0.22)		77	(0.23)	

a)R^2=.34 (Adjusted R^2=.31). b) R^2=.78 (Adjusted R^2=.77). c)R^2=.60 (Adjusted R^2=.58). d) R^2=.46 (Adjusted R^2= .43).

Table 8.24(c) shows that mode of address (C) influenced the use of active chat partner selection strategies. However, contrary to what was hypothesised, the teenagers used less

active strategies in the youth than in the neutral condition. In exploring the significant interaction between context and gender it became clear why this was found (see Figure 8.5).

Figure 8.5 Active chat partner selection strategy: Interaction between gender and condition (test H8.21)



When addressed based on their youth the boys were less likely to use the active strategies to select a chat partner while, in the neutral condition, the boys and girls used this strategy to an almost equal extent (see Figure 8.5). This might be due to the activation of peer comparison in the youth condition; in the peer environment chatting is considered less 'masculine' (see Gross 2004; Jackson 2001, McKay et al. 2005) and, therefore, the boys might argue in this condition that they accidentally do what they do in chat rooms.

⇒ Since none of the teenagers had more active strategies in the youth, or more passive strategies in the neutral, condition, *H8.21* is rejected.

Comment on the importance of youth and search and selection strategies

An analysis of the differences between those who find being young important and those who do not shows that condition has a large impact on the strategies of those who have low affective commitment to the youth identity category (see Table 8.25).

Table 8.25 Active cognitive strategies: ANOVA condition comparison based on youth (test H8.21)

	Youth-Neutral condition comparison					
	Active link selection[(a)]			Active chat partner selection[(b)]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.01	0.94	1	1.75	0.19
Condition (B)	1	6.09	0.02	1	7.42	0.01
Importance of youth (C)	2	2.08	0.13	2	0.61	0.54
Ax B	1	0.02	0.90	1	1.07	0.31
A x B x C	6	3.04	0.01	6	2.28	0.05
Total	69	(0.51)		69	(0.21)	

a) R^2=.50 (Adjusted R^2=.41). b) R^2=.67 (Adjusted R^2= .61).

Figures 8.6 and 8.7 graphically depict how, in the neutral condition, the teens who have low affective commitment to being young, that is they attach less importance to their age, use on average less active strategies for information searching and more active strategies for chatting, than in the neutral condition; the gender of the teenager does not influence this effect of condition.

Figure 8.6 Active search strategies by affective commitment to being young, group gender and condition (test H8.21)

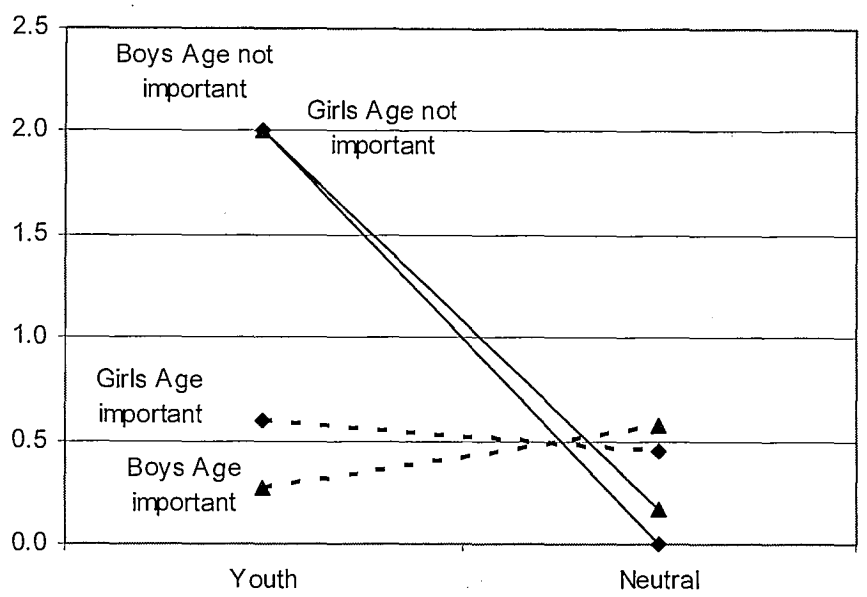
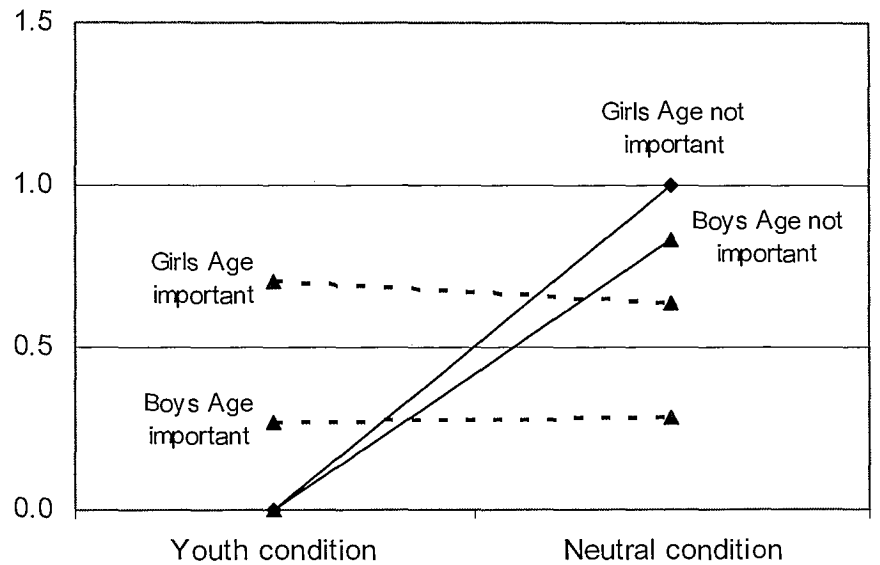


Figure 8.7 Active chat partner selection strategies by affective commitment to being young, group gender and condition (test H8.21)



However, for those with high affective commitment, that is their age is important, gender makes a difference in their search strategies. Figure 8.6 shows that girls who consider their age to be important are less likely to apply active search strategies in the neutral (av=.45) than in the youth condition (av=.60), while boys are more likely (av=.57 in the neutral vs av=.27 in the youth condition) to do so. In contrast, Figure 8.7 shows that girls who think their age is important are more likely (av=.67) to apply active chat partner selection strategies than boys who think their age is important (av=.28), no matter what condition they are in.

H8.21 hypothesised that the teenagers have more active (and less passive) search strategies in the youth than in the neutral condition. Based on the findings presented in Figures 8.6 and 8.7:

⇒ *H8.21* can be supported for the search strategies of the teenagers with low affective commitment to being young (i.e. who considered being young not important).

⇒ *H8.21* is rejected for the chat partner selection strategies of the teenagers with low affective commitment to being young.

⇒ *H8.21* can be supported for the search strategies of the girls with high affective commitment to being young but not for similar boys.

⇒ *H8.21* is rejected for the chat partner selection strategies of the boys and girls with high affective commitment to being young.

When, for the same strategies, the importance of gender was incorporated, the effect of condition, marginally present in Table 8.24(d) became significant ($F_{1,81}$=4.88, p=0.03) and the teenagers were more likely to select chat partners according to passive strategies in the youth than in the neutral condition.

⇒ Therefore, *H8.21* is rejected for chat strategies (see also Table 8.24c) even when importance of gender is controlled for.

8.5.2 Cognitive strategies for perceived typical behaviour

The teenagers were also asked to indicate the ways in which they usually behaved when they were looking for information online or when they selected a chat partner. In relation to general information and chat behaviour, there are less clear indications based on theory of

what the typical behavioural patterns of a high status (i.e. expert) group might be. However, as before, expert or high status users are assumed to be more aware of their search strategies. A factor analysis showed that there were three types of search strategies.[101] None of the scales included using *search engines,* which was therefore included as a separate variable; the other scales were:

- *coincidence* or less expert strategies (asking others for help or stumbling across information);
- *expert* strategies (relying on favourites and trusted sites);
- '*non- strategy*' (do not know or do not search).

In relation to chat partners it was assumed that there might be differences in terms of contacting familiar people (family and friends), strangers, and not chatting (see also Livingstone, Helsper & Bober under review). However, since there is no theory on which such hypotheses could be based, the direction of these differences was left open. Therefore, the following hypotheses were formulated:

> H8.23: The girls have (a) less expert strategies for information searching, and (b) select different chat partners in the gender than in the neutral and youth conditions.
>
> H8.24: The boys have (a) more expert strategies for information searching, and (b) select different chat partners in the gender than in the neutral condition.
>
> H8.25: The African Caribbean teenagers have (a) less expert strategies for information searching, and (b) select different chat partners in the ethnicity than in the neutral condition.
>
> H8.26: The Asian teenagers have (a) more expert strategies for information searching, and (b) select different chat partners in the ethnicity than in the neutral condition.
>
> H8.27: The teenagers in the youth condition have (a) more expert strategies for information searching, and (b) select different chat partners than those in the neutral condition.

In the next section these hypotheses are first tested for typical search strategies used while looking for information, and second for the typical selection of chat partners.

---

[101] See Appendix X for Factor analyses in experiment.

Findings: Typical search strategies

Table 8.26 shows the ANOVAs for search strategies (expert search behaviour and use of search engines) for which significant effects of independent variables were found. There were no significant effects of condition or gender.

Table 8.26 Search strategy: ANOVA condition comparison based on gender for expert and search engine strategies (test H8.23a & H8.24a)

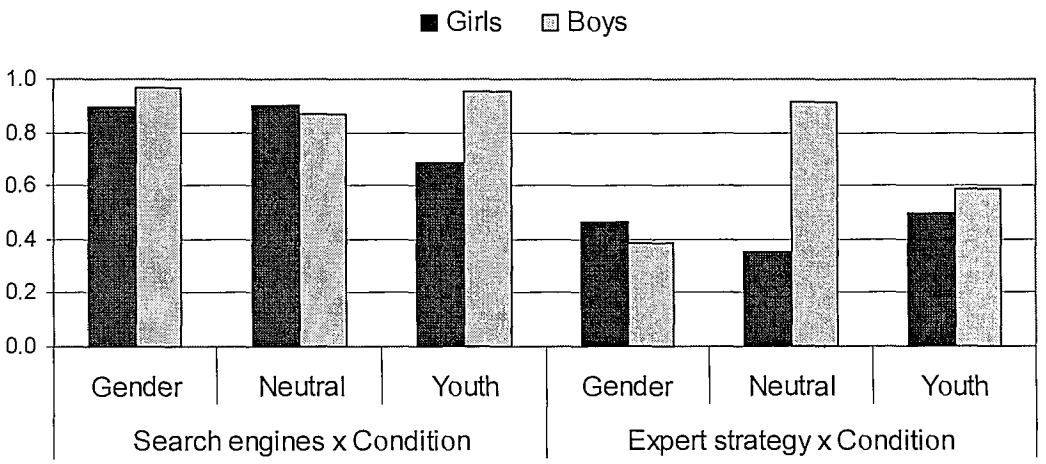
	Gender condition compared with...					
	Neutral condition on Expert strategy[a]			Youth condition on Use of search engines[b]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	5.83	0.02	1	9.71	0.00
Ethnicity group (B)	2	1.38	0.26			
Condition (C)	1	3.13	0.08	1	4.21	0.04
A x B	2	0.28	0.75			
A x C	1	6.92	0.01	1	3.46	0.07
B x C	2	0.23	0.79			
Error	129	(0.44)		130	0.08	

a) R^2 =.42 (Adjusted R^2=.37). b)R^2=.92 (Adjusted R^2=.92).

Table 8.26(a) shows that there was an interaction effect between condition and gender on expert strategies, and 8.26(b) shows a main effect of condition on search engine strategies. No such effects were found for coincidence and non-strategies.

Figure 8.8 illustrates the significant effects of condition and group gender on different search strategies.

Figure 8.8 Search engine strategies: Interaction between gender and condition (test H8.23a & H8.24a)



On average, the girls used less expert strategies (av=.42), and less search engines, (av=.84) than the boys (av=.54 and av=.96) but, as Figure 8.8 shows, the effect of condition on expert search strategies in the boys is opposite to that in the girls.

⇒ Since the girls were more, instead of less, likely to use expert strategies in the gender condition than in the neutral (and youth) condition, *H8.23a* is rejected for typical search strategies.

⇒ Since the boys were less likely in the gender (and youth) condition to use expert strategies than in the neutral condition, *H8.24a* is rejected for typical search strategies.

The teenagers were more likely to use search engines in the gender than in the youth condition. Since Holscher and Strube's (2000) argument is that the specific use of search engines is a more expert strategy, this finding is counter intuitive, especially for the girls.

⇒ Therefore, *H8.23a and H8.24a* are again rejected for typical search strategies.

Table 8.27 Search strategy: ANOVA condition comparison based on gender group (test H8.25a & H8.26a)

	Ethnicity – Neutral condition comparison					
	Coincidence strategy[a]			Expert search strategy[b]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	4.44	0.04	1	6.31	0.02
Ethnicity group (B)	1	0.54	0.47	1	0.00	0.96
Condition (C)	1	1.37	0.25	1	0.18	0.67
A x B	1	0.05	0.82	1	2.64	0.11
A x C	1	0.13	0.72	1	2.09	0.15
B x C	1	8.65	0.01	1	0.11	0.74
Error	48	(0.31)		48	(0.59)	

a) R^2 =.35 (Adjusted R^2 = .25). b) R^2 =.45 (Adjusted R^2 = .37).

Table 8.27 shows again that there was a main effect of gender on the expert search strategy and also on the coincidence strategy (see Table 8.26). The girls were less likely to use the expert strategy and more likely to use the coincidence strategy than the boys.

The interaction effect between condition and ethnicity for the coincidence search strategy is depicted in Figure 8.9.

Figure 8.9 Coincidence strategy: Interaction between ethnicity and condition (test H8.25a & H8.26a)

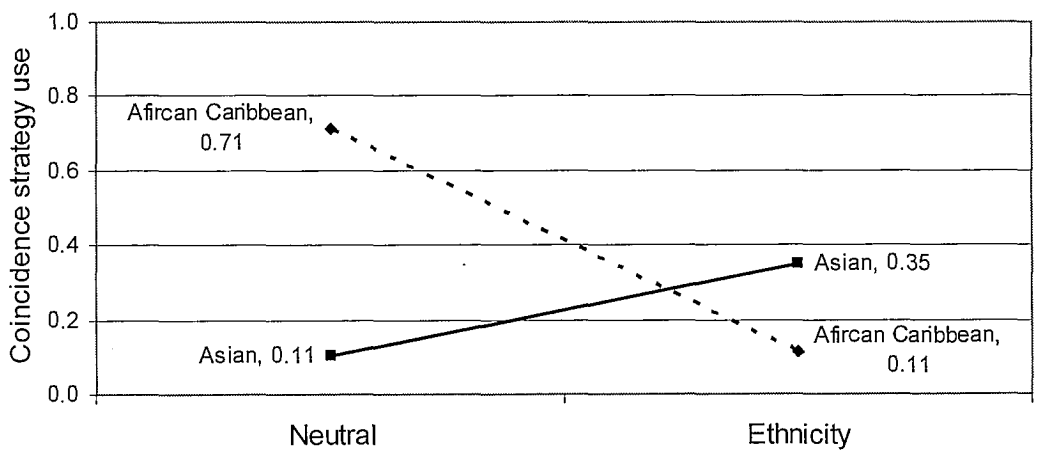


Figure 8.9 shows that the African Caribbean teenagers were more likely to use the coincidence strategy in the neutral than in the ethnicity condition, while the Asian teenagers were more likely to use this strategy in the ethnicity condition. This is contrary to what the hypotheses suggested.

⇒ Since the higher internet status Asian teenagers claimed more novice, and the low internet status African Caribbean teenagers less novice, strategies in the ethnicity condition than in the neutral condition, *H8.25a* and *H8.26a* are rejected for information seeking strategies.

ANOVAs showed no significant differences in information search strategies between the youth and neutral conditions.

⇒ Since the teenagers did not use more search engine or expert strategies, and did not use less coincidence search strategies, in the youth condition, *H8.27a* is rejected.

Findings: Perceived normal chat behaviour

A factor analysis showed three factors for chat strategies[102]. The first focused on *friends* that the teenagers had in the offline world, a second factor was related to *family* members (either far away or nearby), and the third was a factor that included *strangers* only.

Table 8.28 Chat strategies: ANOVA condition comparison based on gender (test H8.23b & H8.24b)

	Gender - Neutral condition comparison								
	Friends[(a)]			Family[(b)]			Strangers[(c)]		
Independent variable	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.04	0.84	1	2.63	0.11	1	0.00	0.97
Ethnicity group (B)	2	3.18	0.04	2	4.35	0.01	2	1.51	0.23
Condition (C)	1	6.63	0.01	1	0.01	0.94	1	2.29	0.13
A x B	2	0.87	0.42	2	1.35	0.26	2	0.47	0.62
A x C	1	0.01	0.94	1	3.20	0.08	1	2.15	0.14
B x C	2	3.03	0.05	2	2.78	0.07	2	6.36	0.00
Error	129	(0.89)		129	(0.47)		129	(0.08)	

a) R^2 =.80 (Adjusted R^2 =.78). b) R^2=.38 (Adjusted R^2=.33). c) R^2 =. 21(Adjusted R^2 =.14).

Table 8.28 shows that there was a main effect of ethnicity on typical chat partner selection. The Asian teenagers were the most likely (av=.60) to select family as chat partners, followed by the African Caribbean teenagers (av=.39), and the least likely were the White teenagers (av=.28). There was also a main effect of condition for the selection of friends as chat

[102] See Appendix X (Factor analyses experiment).

partners: the teenagers were less likely in the neutral condition (av=1.6) than in the gender condition (av=1.9) to say that they select friends as chat partners.

The direction of the interaction effect of ethnicity and condition for the selection of strangers shown in Table 8.28 was not hypothesised, although it was significant. This interaction effect is depicted in Figure 8.10.

Figure 8.10 Stranger chat partner selection strategy: Interaction between ethnicity and condition

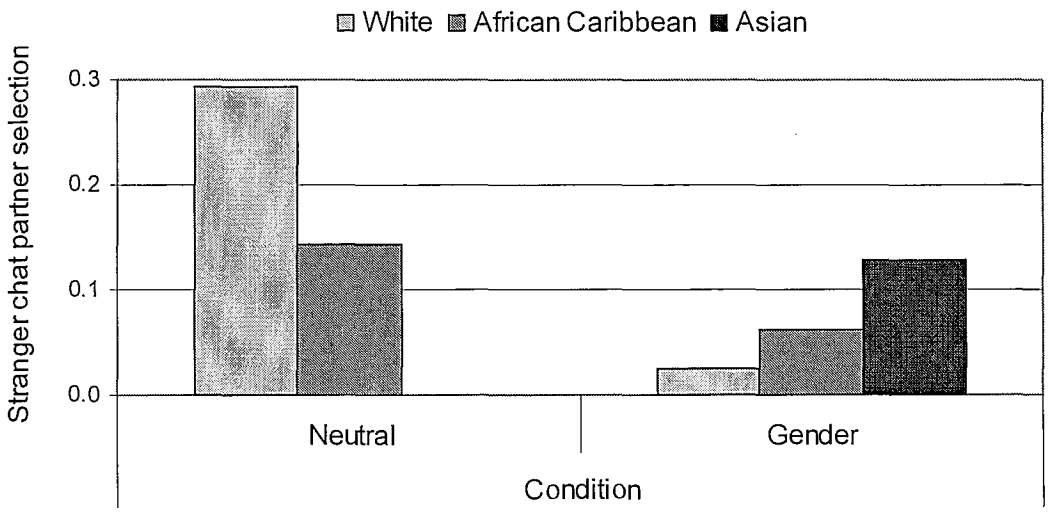


Figure 8.10 shows that the White teenagers were more likely to say that they chat to strangers in the neutral (av=.29) than in the gender condition (av=.02), while this was exactly the reverse for the Asian teenagers (av=.00 v. av=.13). The African Caribbean teenagers were less likely to select strangers as chat partners in the gender (av=.06) than in the neutral condition (av=.14) and, in both conditions, they were in between the White and the Asian groups in selecting a stranger as a chat partner.

Table 8.29 Chat strategies: ANOVA condition comparison based on gender group (test H8.23b & H8.24b)

	Gender - Youth condition comparison								
	Friends[a]			Family[b]			Strangers[c]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	3.19	0.08	1	0.42	0.52	1	0.97	0.33
Condition (B)	1	0.04	0.84	1	0.00	0.95	1	0.25	0.62
A x B	1	4.79	0.03	1	0.30	0.58	1	0.00	1.00
Error	130	(0.90)		77	(0.64)		77	(0.11)	

a) R^2 =.80 (Adjusted R^2 =.79). b) R^2=.32 (Adjusted R^2=.30). c) R^2 =. 10(Adjusted R^2 =.08).

Table 8.29(a) shows that there was an interaction effect on the selection of friends, but no effect of condition on the selection of family or strangers in the comparison of youth and gender conditions. The interaction effect between gender and condition is depicted in Figure 8.11.

Figure 8.11 Selection of friends as chat partners: Interaction between gender and condition (test H8.23 & H8.24)

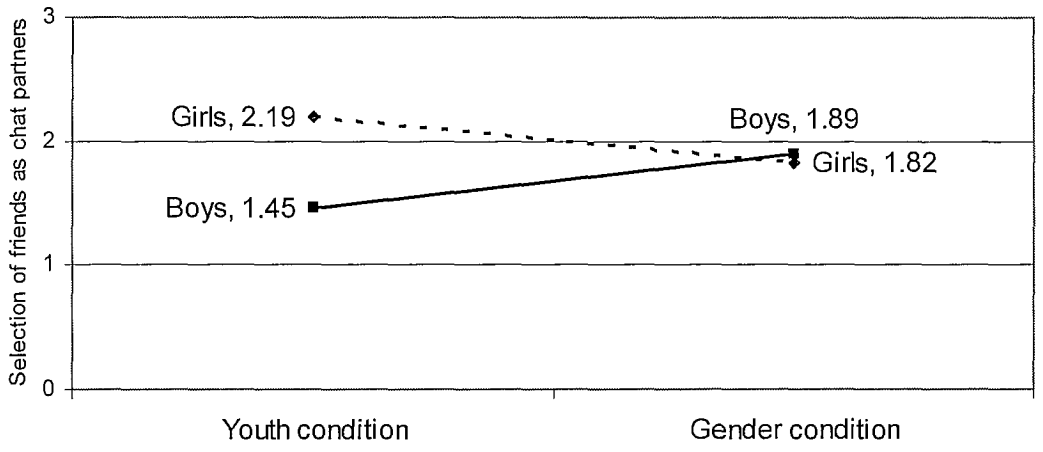


Figure 8.11 shows that, in the youth condition, the girls were more likely than the boys to assume a strategy of selecting friends as chat partners, while there was no difference between the boys and girls in the gender condition.

⇒ Since mode of address changed chat partner selection strategies of the boys and girls, *H8.23b* and *H8.24b* can be supported.

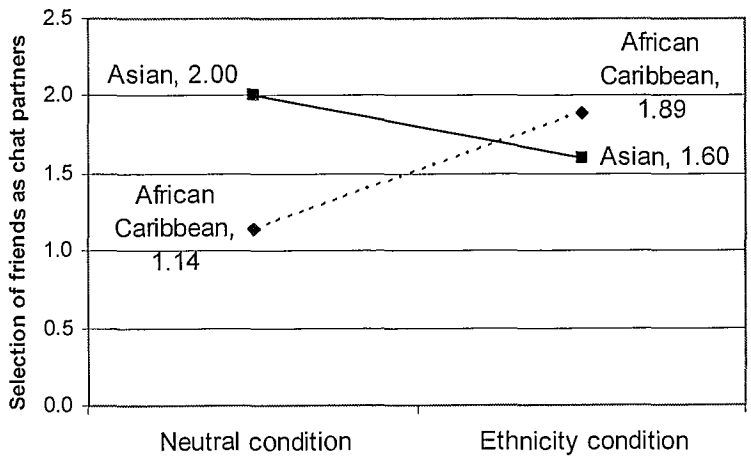
Table 8.30 Chat partner selection: ANOVA condition comparison based on ethnic group (test H8.25b & H8.26b)

	Ethnicity-Neutral condition comparison								
	Friends[a]			Family[b]			Strangers[c]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	0.26	0.61	1	0.03	0.85	1	0.15	0.70
Ethnicity group (B)	1	1.19	0.28	1	1.39	0.24	1	0.55	0.46
Condition (C)	1	0.36	0.55	1	0.25	0.62	1	3.12	0.08
A x B	1	0.07	0.79	1	0.02	0.88	1	0.00	1.00
A x C	1	0.16	0.70	1	0.10	0.75	1	1.36	0.25
B x C	1	4.37	0.04	1	1.95	0.17	1	0.39	0.54
Error	48	(0.71)		48	(0.55)		48	(0.12)	

a) R^2=.83 (Adjusted R^2=.81) b) R^2 =.45 (Adjusted R^2 =.37) c) R^2 =.26 (Adjusted R^2 =.15)

Table 8.30(a) confirms the interaction effect between condition and ethnicity on the selection of friends as chat partners (see also Table 8.28(a)). Figure 8.12 depicts this interaction for the Asian and African Caribbean teenagers.

Figure 8.12 Selection of friends as chat partners by ethnicity and condition (test H8.25b & H8.26b)



While the African Caribbean teenagers were more likely to select friends as chat partners in the ethnicity condition than in the neutral condition, the Asian teenagers were less likely to do so (see Figure 8.12).

⇒ Since there were differences between conditions in the likelihood of selecting friends as chat partners, *H8.25b* and *H8.26b* can be supported.

Table 8.31 Selecting friends as chat partners: ANOVA condition comparison based on youth (test H8.27b)

	Youth- Neutral								
	Friends[a]			Family[b]			Unknowns[c]		
Independent variables	*df*	*F*	*p*	*df*	*F*	*p*	*df*	*F*	*p*
Gender group (A)	1	5.97	0.02	1	0.42	0.52	1	0.97	0.33
Condition (B)	1	1.54	0.22	1	0.00	0.95	1	0.25	0.62
A x B	1	1.31	0.26	1	0.30	0.58	1	0.00	1.00
Error	77	0.83		77	0.64		77	0.11	

a) R^2=.78 (Adjusted R^2=.77). b) R^2=.33 (Adjusted R^2=.30). c) R2 =. R^2 (Adjusted R2 =.09).

Table 8.31(a) shows that there was only a main effect of gender, and not of condition, on the selection of friends as chat partners when all the ethnic groups were compared. The girls were more likely to select friends as chat partners (av=1.9) than the boys (av=1.4).

⇒ Since there were no differences between the youth and neutral conditions in typical chat partner selection, *H8.27b* is rejected.

Comments on the importance of identity and strategies for normal behaviour

When the interaction between gender and the affective commitment to gender categorisation was controlled for, the main effect of gender ($F_{(1,139)}$=0.09, p=.28) and condition ($F_{(1,139)}$=0.07, p=.39) became insignificant for the comparison between the gender and neutral conditions for *expert search* strategies (see Table 8.26 for effects without the importance of gender control).

The main effect of gender ($F_{(1,134)}$=16.85, p<.01) on the use of *search engines* as a strategy remained strong, but the effect of condition disappeared. The boys used search engines more than the girls, with equal levels of affective commitment to gender.

⇒ Since the expert strategies applied by the girls and boys with equal levels of affective commitment to their gender group did not differ between the gender, youth and neutral conditions, *H8.23b* is again rejected (see also section 8.5.2.1).

A reanalysis of *chat* strategies which incorporated affective commitment to ethnic and gender groups showed that the effect of condition, shown in Table 8.29, disappeared in relation to *friend* selection strategies.

⇒ Since there were no differences in selecting friends as chat partners between the gender and youth conditions when affective gender was controlled for, *H8.23* and *H8.24b* are rejected. They are still supported for the comparison between the gender and neutral conditions (see Table 8.28).

⇒ Since there were no differences in selecting friends as chat partners between the ethnicity and neutral conditions when affective commitment to ethnicity was controlled for, *H8.25b* is rejected.

8.5.3 Summary: Cognitive strategies

Mode of address did not have a consistent effect on the rationale the teenagers gave for their everyday internet information search and chat behaviour.

While condition had an effect on whether the teenagers reported the use of expert search strategies, the effects found sometimes contradicted the hypotheses. For example, when the teenagers were addressed based on their gender, the girls indicated using more and the boys indicated using less expert strategies than when gender was not mentioned. A contradictory effect was also found for the effect of ethnicity address on the Asian and African Caribbean teenagers. However, findings in relation to specific search strategies, such as being interested in the link, followed the expected hypotheses, which stated that the boys would be more likely to follow this expert strategy when addressed based on their gender than the girls.

Mode of address did influence the type of chat partners the girls and boys typically selected and since no direction of this difference was anticipated, the hypotheses were supported. The boys selected more friends than the girls in the youth and ethnicity conditions, but there was no difference between boys and girls in the selection of friends in the gender condition. The girls were more likely to say they normally chat to family in the gender condition, but equally likely to select family in the youth and ethnicity conditions.

There were no effects of condition on chat partner selection between the ethnic groups when importance of ethnic identity category was taken into consideration, nor was there any effect of addressing the teenagers based on their youth.

8.6 Summary and Discussion

This chapter set out to answer the question of whether or not a difference in the social context in which a teenager uses the internet causes a difference in their internet behaviour and attitudes.

This idea, that social context influences how people see themselves and therefore impacts on behaviour and attitudes, was based on social identity and self-categorisation approaches (Oakes, Haslam & Turner, 1994; Sani & Bennett 2001). The experiment presented in this chapter manipulated social context in a manner often used by Social Identity Theory (SIT) and Computer Mediated Communication (CMC) studies. By changing the way in which the participant was addressed, different group memberships were activated, which should have resulted in different self-perceptions.

In this, teenagers from different ethnic groups were assigned to four possible context conditions in which they were addressed based on their gender, their ethnicity, their age, or in a neutral manner. These conditions were thought to activate higher or lower internet statuses, which in turn, were thought to influence identity, self-efficacy, attitudes, (search and chat) behaviour, and cognitive strategies in relation to the internet. The general hypothesis in relation to all these five elements was that activating high status group membership leads to more expert internet behaviour and strategies, and referred to the hypothesis based on the general model presented in Figure 3.7.

> H7a: Social context determines which group membership is activated through explicit reference to this group, and therefore influences whether people think of themselves in terms of high or low status in relation to internet use.

Since mode of address or context did not have a consistent influence on any of the five elements measured, *H7a* cannot be fully supported or rejected.

The first analyses showed that social context did not influence the importance of certain group identities to the teenager, which suggests that group membership is not activated by social context. However, effects of mode of address were found in further analyses of self-

efficacy, behaviour and cognitive strategies which suggests, in turn, that self-perception is changed by context without the person being aware of this.

Even in these cases, the support for *H7a* is only partial because these effects were found for very specific gender or ethnic groups, and were not consistent. In some instances, the findings were in the exact opposite direction of the general hypothesis that activation of a higher status social identity leads to high status behaviour. The most apparent confirmation of this hypothesis was the influence of context on self-efficacy and on search behaviour. Evidence that contradicted the 'high-status-leads-to-expert-behaviour hypothesis' was found for cognitive reasoning behind searching for information online. Evidence for an effect of mode of address on chat partner selection strategies was also found, although no hypotheses were formulated in relation to the direction of this effect.

In what follows the findings will be explored in relation to group gender and ethnicity, and conclusions drawn about the contextual influences on high and low internet status groups.

8.6.1 Gender, context and internet use

Bandura (1996, 2003) suggested that self-efficacy is an important factor in determining the later academic success of boys and girls. If Eastin and LaRose (2000) and Durndell and Haag (2002) were right to assume that internet self-efficacy has the same function for internet and computer use, it is important for researchers to understand how group membership and self-esteem are related, and whether a negative relationship between the two can be influenced by changing the context of use for boys and girls.

One of the clearest findings in this experiment was that addressing girls in anything other than a neutral fashion made them perceive themselves as less skilled than boys. Therefore, if one wanted to increase internet self-efficacy in girls, this could be achieved by avoiding a situation in which they use their (high status) peers as the parameter of comparison.[103] A neutral approach, or an approach focusing on other identity aspects, would probably increase

[103] The expectation was that teenagers would compare themselves with older people when addressed as young, but this did not seem to be the case and instead they seemed to have chosen their peers as a reference group, especially when it made sense in relation to the tasks at hand.

enthusiasm for, and comfort with, the internet in girls (but diminishes it in boys), especially because the girls in the youth condition also showed an increased frustration with the internet. This might be explained through Gill and Grint's (1995) argument that girls in a lower status context internalise stereotypes about how girls are 'supposed to' think about the internet (see also Wajcman 1991, 2004).

Against the argument that self-efficacy and behaviour are related, is the fact that the girls in the youth and gender conditions did not behave differently from those in the neutral condition. There was some evidence that the girls were slower in selecting links than the boys, and more likely to select African Caribbean and male chat partners, but none of these were related to the way in which they were addressed. Therefore, while the girls' and boys' confidence changed according to context, this same difference in mode of address did not have an effect on the actual behaviour of the girls. Instead, the girls in general showed less expert behaviour, such as slower selection times (Holscher and Strube 2000). Chatting appeared to be a 'sexualised' environment for these teenagers: the girls were more likely to select boys as chat partners, and the boys invariably more likely to select girls, no matter how they were addressed. Similarly, the girls were less likely to choose female links than the boys if asked to select two links from a list of search results. This supports Boneva et al.'s (2006) findings that teenagers communicating through Instant Messaging prefer to talk to the other gender.

While in actual behaviour gender had mostly strong main effects, in relation to cognitive strategies, context often interacted with gender to influence the level of expertise or the type of strategy used. Girls are stereotypically considered more expert in online communication as opposed to information searching (McKay et al. 2005; Jackson 2001; Oudshoorn, Rommes & Van Slooten 2003), and this was partly supported by the findings. The boys used less active (i.e. expert) chat partner selection strategies than the girls when they were addressed in a way that made them compare themselves with (girl) peers in the youth condition. In contrast, they showed a more active search strategy in relation to search behaviour when addressed as boys. Thus a lower internet status situation for the boys (peer comparison and chat behaviour) led to less active strategies, and a high status condition (gender comparison and information

seeking behaviour) led to more active or more expert search strategies. For information searches, an activity in which girls are assumed to be of lower internet status, the girls used less expert strategies when they were addressed based on their gender.

There also seemed to be a difference between the justification of behaviour that has just taken place and the perceptions that the teenagers had of their general or normal behaviour. In those analyses referring to typical behaviour, the girls did show on average less expert behaviour than the boys, but this depended on mode of address, and the effects found for context were in the opposite direction of what was hypothesised; a high status condition led to less expert strategies. On average the girls used expert strategies more in the gender than in the neutral condition, and the boys in the gender and youth conditions were less likely to use expert strategies to find information in the neutral condition. This is one of the puzzles produced by this thesis for which an answer was not readily available. Further research could indicate whether this is a consistent finding, or if it is perhaps due to the specific make up of the sample of vulnerable teenagers.

Differences between the boys and girls that also need further exploration are those in relation to the chat partners selected. In gendered conditions, the girls said they were less likely to select friends than in the youth condition, and vice versa for the boys. This finding could be explained along the same lines as the actual behaviour observed, because in the youth (peer comparison) condition it became more important for the girls to find a partner than a family member. The findings for the boys contradict this, since they are less likely to select a friend in the peer comparison condition. Further research should explore the relationship between social context and chat partner selection.

In summary, a low status condition for girls (when they were addressed as girls or made to compare themselves with their peers) leads to lower levels of self-efficacy, less expert cognitive strategies in evaluating behaviour just after it has taken place and a more expert perception of their own everyday online behaviour. When boys are put in a condition where they are aware of their peer group or their gender (high status conditions) they assume less expert cognitive strategies when behaviours are considered that are presumably less

'masculine' (i.e. in chats they are of low status) but expert strategies for information searching.

8.6.2 Ethnicity, context and internet use

The effects of context on the differences between the boys and girls were not present to the same extent for the differences between ethnic groups. Context had no effect on their identity. The African Caribbean teenagers found their ethnicity more important than the Asian teenagers and White teenagers no matter how they were addressed. There was no effect on self-efficacy either - all ethnic groups were equally confident; nor was there an effect on attitudes - all ethnic groups were equally positive and negative about the internet.

Context did have an effect on the observed behaviour and cognitive strategies of the ethnic minority teenagers. In general, the teenagers picked partners from the same ethnic group, and the Asian teenagers selected more ethnic minority links, when addressed based on their ethnicity. However, the African Caribbean teenagers showed opposite patterns of response in link selection which, hypothetically, could have been due to their lower internet status in comparison to the Asian teenagers. In cognitive strategies, the findings did not support the hypothesis. The Asian teenagers, who were supposed to be of high status in the ethnicity condition, used less expert strategies while the African Caribbean teenagers used fewer of the novice strategies in the low status condition.

Again mode of address influenced general chat partner selection. The Asian teenagers were the least likely to select strangers and the most likely to select friends, when addressed in a neutral fashion. The African Caribbean teenagers, on the other hand, were more likely to do this in the (low status) ethnicity condition.

In summary, the findings for the ethnic groups are slightly less consistent than for the gender groups, and they contradict each other depending on what aspect of internet use and which ethnic group is observed. In-group preference activated by social context seemed important in actual behaviour, such as when chat partner selection was observed in the high internet status Asian teenagers, but this was contradicted by the findings for the low internet status

African Caribbean teenagers, who turned away from their in-group when their ethnic identity was emphasised. Similarly, when the teenagers were asked about their cognitive strategies for information searching, the findings contradicted the hypothesis of high internet status behaviour in Asian, and low internet status behaviour in African Caribbean, teenagers.

8.6.3 Affective commitment and self-categorisation theory

In sections 2.3.5 and 3.1.4 the self-categorisation approach was said to argue that different group memberships influence behaviour whether others are present or not (Jetten, Spears, & Manstead 2001; Turner, Hogg et al. 1987). In contrast to the stereotyping frameworks, it has an agentic approach to the internalisation of group norms. The manner in which group status influences behaviour is said to be based on an evaluation of the use and applicability of group norms to certain behaviours (Ellemers, Kortekaas, et al. 1999; Finlay & Lyons 2000). Thus, in the case of the experiment presented in this chapter, if the teenagers consider the membership of a low or high status group to be relevant to their internet behaviour, they should apply these group norms to their own behaviour and interpret it, and act, as a member of this high or low status group.

CMC and stereotyping frameworks assume this process of appropriation of group norms takes place autonomously without regard for applicability. CMC theorist argue that group norms can be of stronger influence in conditions where the person is not directly addressed in terms of a defined identity because, in those contexts, people try to discover the behavioural norms that will allow them to fit in (Walther 1996). However, SIDE frameworks argue the opposite and say that, whenever the person is not identifiable as a person, group norms become important in determining behaviour (Lee 2004; Lea, Spears & De Groot 2001).

Based on self-categorisation and SIDE theory, H4a to H4c were formulated, and the findings testing these hypotheses are presented below.

> H4a: Group attributes (stereotypes) are internalised into the person's self-perception in social contexts that make this group identity important.

Based on the findings presented in this chapter *H4a* is rejected, because social context (condition) influenced behaviour even when group identity was not important, that is even

when there was low affective commitment to a group identity. Affective commitment did not influence either perceptions of self (self-efficacy) or the teenagers' attitudes.

There were only a few instances in which affective commitment influenced the effect of condition on behaviour and cognitive strategies. In those few instances, condition had a larger impact on those teens for whom their gender or age was *not* important while, for those teenagers where their gender or age was important, traditional gender differences seemed to play a bigger role. In addition, this impact of importance of identity was stronger for information related activities and strategies than for chat or interaction related activities and strategies. The fact that affective commitment to group identity was not always related to the effect that condition had on the teenagers suggests that the internalisation of group norms took place on a subconscious level, and thus favours traditional stereotyping and SIDE models, more than the agentic self-categorisation framework.

> H4b: Once a person has self-categorised as a member of a certain group and affective commitment to the group is high, then these group attributes are internalised.

The impact of the relevance of these group norms as proposed in *H4b* might not have been decided based on awareness of group membership, but the findings suggest that group norms were more likely to influence behaviour that was considered typical of that group, and that conditions could make the group more relevant for self-evaluations.

H4b can be partially supported, especially for the gendered identity, since the girls had lower self-efficacy levels in those conditions (the gender and youth conditions) that made the low status gendered identity more relevant. There were no similar effects found on self-perception or attitudes for the different ethnic groups.

> H4c: Different self-categorisations based on group membership result in different behaviours and attitudes.

H4c is supported for gender categorisation because, similar to what was found for self-perception, the girls applied group status to their behaviour. For example, when asked to perform or think about chat type behaviour, the girls showed high status behaviour in the

gendered and youth conditions, and they showed low status behaviour if asked to act or think about information seeking. Stressing their gender and youth also caused them to select partners of a male gender, which might be considered an indication of stereotypical gendered behaviour.

Context (i.e. categorisation) did not seem to have reinforcing effects on ethnic groups for stereotypical behaviour. The ethnic minority teenagers behaved stereotypically in that they were more likely to select links and chat partners of the same ethnicity, but this was not influenced by mode of address. This does mean that ethnic group norms are always considered relevant whether group identity is emphasised or not. There were effects of condition on cognitive strategies used by the ethnic groups, but these seemed either to contradict the hypothesis of internalising group norms that were relevant, or to be caused by differences in the importance of ethnic identities.

In answer to Q8.2 (p.289), the findings presented in this chapter show that social context or mode of address had an impact, albeit not consistent, on the self-perceptions, behaviour and cognitive strategies of the vulnerable teenagers. This effect was stronger for gender than for ethnic groups, and seemed to be absent for attitude formation, on which social context had no effect. In addition, affective commitment was one, but not a necessary, condition under which social context had an influence on behaviour and cognitive strategies.

8.7 Conclusion

Notwithstanding the absence of direct interactions with others, the teenagers did seem to make an internal evaluation of which group to compare themselves with, beyond that given by the social context, especially in the youth condition. This application of categories probably did not take place through awareness or importance of group identities as proposed by self-categorisation and SIT theories. Categorisation as a member of a group led to a more likely adoption of group norms than a neutral approach, which suggests that a social identity approach using the SIDE or CMC frameworks would probably be more adequate than an agentic approach in explaining this behaviour. The findings argue for the equalisation effect often assumed in CMC, because group membership was less important in neutral conditions

(Culnan & Marcus 1991; Walther 1996). The assumption by SIDE frameworks that being an anonymous member of an anonymous group will lead to behaviour that follows group norms was also supported by this experiment (Hancock and Dunham 2001; Lee 2001).

There are a few caveats to this general support for SIDE and CMC frameworks: the teenagers' level of anonymity or social categorisation influenced gender based group norms more readily than ethnicity based group norms, perhaps because gendered stereotypes were the most easily applied to internet use. It is possible that the tasks at hand, although chosen to vary and be important to different aspects of identity (i.e. human rights to ethnic identity, chatting and information seeking to gendered identities), were not considered relevant for the ethnic identity; perhaps using music selection (considered to be divided along ethnic lines) or event websites (similarly) as part of the task could make these aspects more salient.

In answer to Q8.1, posed at the beginning of the chapter, SIT and self-categorisation theories can be applied to internet use, because social context influenced the way in which the teenagers used the internet, and the effect social identity had was not fixed but dependent on context. However, this influence did not always correspond to expectations, and took place without a conscious awareness or importance of group identity. This suggests that CMC and SIDE frameworks within SIT might be more relevant than the agentic aspects of these theories.

Further research is required to test whether the contradictory effects found in this experiment are consistent and whether they persist over time. Perhaps repeated categorisation and a clearer separation of low and high status or stereotypical behaviour will produce stronger effects than those found in this one off experiment.

The next and final chapter will bring together all the findings and the theory presented in the first eight chapters, in an understanding of how the processes behind internet use by different vulnerable groups can be explained, and whether or not a change in context influences these processes.

9 Summary and conclusions: When and how does social exclusion matter in internet use?

In the academy and, increasingly, in policy circles, the argument is that digital exclusion is no longer a matter of inequalities in access. This raises the following question:

> If the digital divide cannot be understood, explained or measured through differences in resources and access, which framework offers a more comprehensive understanding of these issues?

Restructuring how we think about the use of information and communication technologies (ICTs) is especially important for socially excluded groups, since they are vulnerable to further marginalisation due to limited access to the opportunities that ICTs offer. Existing digital inclusion policies do not do justice to the variety of processes behind internet use in different social groups. This is because the framework that underpins these policies is both focused on macro socio-economic factors and grounded in the idea that social and digital inequality are based on similar principles.

This thesis argues that theorisation about digital exclusion should be restructured to incorporate socio-psychological theories, which will widen the scope of research to include social group and individual level explanations of digital exclusion. In addition, they allow for a distinction between the contexts in which social and digital exclusion coincide, and those in which they take separate paths.

The focus of this thesis is on young people because, while gender, ethnicity, disability and sexuality have all been related to digital exclusion in adults, little is known about the processes behind the internet use of young people from these vulnerable groups. Lack of knowledge is cause for concern since this generation will make up the future ICT based society; policy initiatives have focused heavily on this age group without a solid evidence base to build upon. This thesis addresses these issues by asking whether a model based on socio-psychological theory that integrates macro-, micro- and meso-level approaches offers a

better understanding of the processes behind internet use by vulnerable teenagers than the macro digital divide model traditionally used in policy making (Q1.1, p.20). [104]

This chapter will briefly review what the thesis set out to do in the first four sections (justification, theory, focus, and procedures). The sections that follow answer three empirical questions derived from the main question (Q1.1):

a. Which processes take place behind internet use by vulnerable groups of teenagers (Q1.6, p.38)?
b. Do these processes differ between groups with different types of exclusion (Q1.7, p.38)?
c. Can these processes be changed by relatively simple interventions in the context in which these teenagers use the internet (Q1.8, p.39)?

In the final section, suggestions are made for the further development of research and methodology used to study digital inclusion.

9.1 Justification

Discussions of social inequalities have started to include issues of access to, and use of, ICTs because society is moving towards a greater dependency on these media in terms of educational, cultural and social opportunities (Cushman & Klecun 2006; Foley et al. 2002, 2003; Norris 2001; Selwyn 2006). This thesis plants itself within this discussion and suggests that it is time to revise the way we look at the use of the internet - the current technical hub of all these activities. These issues carry wider significance, since access to online opportunities has been argued to increase or perpetuate existing social inequalities (Adam & Green 1998; Anderson, Brynin & Raban 2000, 2005; Norris 2001; Ofcom 2006; Van Dijk 2005; Wellman et al. 2001).

Initially access and infrastructure provision dominated digital inclusion debates and, as a result, current ICT policy suffers from a uniform macro approach to exclusion (Loader 1998; Van Dijk 2005). This means that differences in internet use between social groups use are

[104] Thesis questions addressed in the text are indicated between ( ), e.g. this section addresses Q1.1, p.37.20.

seen as primarily caused by differences in resources. General differences between gender and ethnic groups have been reported (Jackson 2001; Mckay et al. 2005; Ofcom 2006a-d; Ono 2003; Spooner 2001a-b; Stanley 2003; Stewart 2003; Torenli 2006) and related to resources, but, as Loader (1998) and Van Dijk (2005) argue, processes behind use have not been properly understood, since most interpretations unilaterally emphasise these macro variables. The macro explanation ignores not only the variety in the processes that lie behind internet use in different groups (Alfonso et al. 2001), but also the effects that changing circumstances might have on individuals (Anderson & Tracey 2001;Warschauer 2002; Woolgar 2002).

The focus on access provision as a solution to inequalities in internet use resulting from macro policies is especially limited for teenagers. This is because, first, access is widespread and multi-sited in this age group and, second, because differences in use continue to exist (Livingstone & Bober 2005a-b; Livingstone, Bober & Helsper 2005). It is therefore necessary to shift the debate from trying to understand what makes young people from these groups access the internet, to what makes them use the internet in different ways. Van Dijk (2005) argued that only an integrated framework that looks at macro-, meso- and micro-levels can shed light on the complex processes behind levels of internet use. The value of this thesis therefore lies in modelling these processes for different groups of young people in different contexts based on a comprehensive theoretical framework.

9.2 Theory

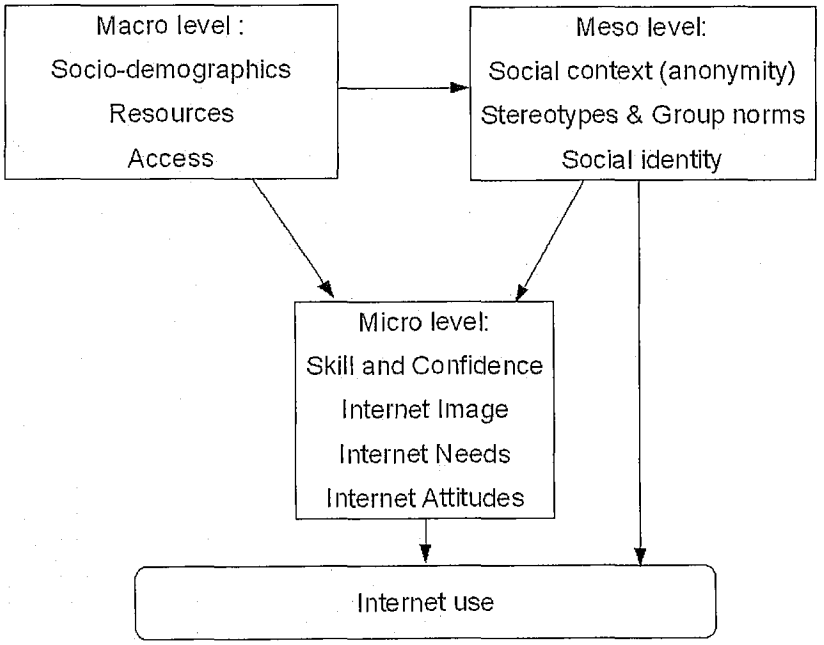
Chapter 2 reviewed the theoretical frameworks seen as essential to the construction of a model that integrates macro-, micro- and meso-level theories. These five frameworks included the traditional macro (i.e. digital divide) approach to digital inclusion; micro approaches to media use, which focused on the Uses and Gratifications (U&G) and Computer Mediated Communication (CMC) frameworks; and meso approaches to behaviour related to group membership, which included traditional stereotyping frameworks based on Feminist and Social Identity Theory (SIT).

It was argued that researchers from these different fields have often been unaware of each others' work, and have encountered difficulties when trying to explain certain differences

because of this lack of awareness. It was further argued that meso socio-psychological frameworks could connect explanations of internet use in terms of individual differences to explanations based on overarching socio-economical issues such as resources, through an understanding of internet use in terms of social identity (see also McKenna & Bargh 2000) and stereotyping (Haddon 2000; Gill & Grint 1995; Sani & Bennett 2001;Wajcman 2000, 2004). Special emphasis was put on the possible importance of context in influencing these processes, following the principles laid down by the SIT and CMC related Social Identification and Deindividuation (SIDE) frameworks (Culnan & Marcus 1991; Lee 2004; Postmes et al. 2001).

To comprehend the bigger picture of internet use, this thesis investigated (a) the explanatory power of each framework, and (b) the added value of approaches over and above the traditional macro framework of digital exclusion. To support the testing of these assumptions about links between macro-, micro- and meso-level factors, a comprehensive model was constructed in Chapter 3 which is schematically depicted in Figure 9.1.

Figure 9.1 Schematic model of framework incorporating macro-, meso- and micro-level factors



The basic digital divide model is represented in this model by the connection between the macro-level (resources and access), micro-level (skills and confidence), and internet use variables on the left hand side of Figure 9.1. The theoretical model used in this thesis to study differences in internet use between groups is depicted by the paths in Figure 9.1. These paths show that the relationship between macro-level variables and internet use and attitudes was argued to be mediated by both meso- and micro-level variables. It also shows that the effect of meso-level variables on internet use and attitudes was assumed to be direct and mediated by micro-level variables.

Thus differences between gender, ethnic, ability and sexuality related socio-demographic groups are explained in this thesis by meso-level variables related to social identity, and micro variables related to the personal characteristics of the user.

9.3 Focus on vulnerable young people

The definition of vulnerability and exclusion is heavily contested and varies between disciplines and scholars. The definition applied in this thesis is based on work by Durieux (2003) and Haddon (2000), and focuses on vulnerability to exclusion from social networks and cultural or educational opportunities, more than on economic or civic aspects of vulnerability. The sampling of participants for this study was based on a range of both concealable (sexuality) and identifiable (gender, ethnicity, and disability) characteristics (see also Frable 1993; McKenna & Bargh 1998), which mark them as socially vulnerable to negative stereotypes (Verkuyten & DeWolf 2002; Wolfe 2000; Augustinas & Walker 1998).

Vulnerability in socio-psychological research is interpreted in terms of status. This thesis argues that it is important to investigate social and internet status separately and not confound them, as has been done in previous studies. A two sided definition of exclusion was therefore adopted, which incorporated social and digital opportunities (Q2.3, p.47). Social status was defined as the perceptions about opportunities in relation to interactions in everyday life (e.g. social networks and acceptance), and internet status as the perceptions about opportunities in relation to online life (i.e. access, internet literacy and exposure). Internet status was based on the interviews and surveys conducted for this thesis, and the research that exists about

internet opportunities for different social groups. The selection of gender, ethnic, ability and sexuality groups was based on earlier research, which showed that differences exist in internet use between women and men (Faulkner 2002; Gross 2004; Jackson 2001; Paparachissi & Rubin 2000; Weiser 2000, 2001; Van Dijk 2005; Van Oost 2002; Wajcman 2004), between ethnic minorities and ethnic majorities (Becta 2002; Eastin & LaRose 2000; Jung 2001; NTIA 2000; Ofcom 2006c; ONS 2001), between disabled and non-disabled people (Burrows et al. 2000; Durieux 2003; Foley et al. 2003 Ofcom 2006d), and between heterosexual and Lesbian and Gay (LGB) individuals (Kwong-Lai Poon et al. 2005; Lee 1999; Tikannen & Ross 2003; Weiser 2001).

These specific groups were classified in this study according to social and internet status as presented in Table 9.1.

Table 9.1 Classification of groups according to social and internet status

Status Social / Internet	Low	High
Low	African Caribbean, Disabled	Girls[105]
High	Asian, LGB	White, Boys, Non-disabled, Heterosexual

Though all age groups merit attention, this thesis studies young people because most policy is focused on young people. Evidence based policy for this group is thus vital, but difficult, since relatively little is known about the processes behind internet use in vulnerable groups within this age category. What is known is that young people in the UK currently have almost universal access to the internet, and are considered internet experts both by themselves and by parents and teachers (Becta 2002; Buckingham 2005; Gross 2004; Livingstone & Bober 2004). The internet has become, and will probably continue to be, an important part of the world in which they live. However, differences between groups of young people exist and it is important to understand what causes these differences, because teenagers who are about to leave education and enter the work force will depend heavily on

[105] While women are generally of lower social status due to differences in income and other aspects of vulnerability, girls in the UK are generally not of higher or lower social status than boys, since they often perform better at school and have the same household background.

ICTs for both economic and social inclusion (Livingstone 2003b; Livingstone, Bober & Helsper 2005b).

In this teenage group, more than in other groups, identity development and group membership play an important role in the formation of behaviour and attitudes (Makros & McCabe 2001; Marcia 1980; Steinberg & Lerner 2004; Streitmatter & Pate 1989; Phinney 1989). It is therefore surprising that social identity and psychological developmental theories have not been applied more extensively to teenagers' internet use, even though they have been applied frequently in studies examining the use of other media.

9.4 Procedures

To be able to understand the processes behind internet use in teenagers, a three step methodological approach was taken (Q3.3, p.94). First, nine interviews were conducted with representatives of vulnerable groups to explore the discourses about the internet in these groups. Second, a survey with 731 teenagers between the ages of 16 and 19 was conducted, which incorporated items that made it possible to study the processes behind internet use from macro, micro and meso perspectives in different groups. The participants came from 15 different educational establishments and special interest groups in the Greater London Area. Chapters 4 to 7 focused on the survey findings using macro (Chapter 4), micro (Chapter 5), and meso (Chapter 6) frameworks and a combination of these approaches, to understand the processes behind internet use (Chapter 7). A third methodology was necessary to understand how changes in context could influence what teenagers do on the internet. Therefore an experiment was conducted with 206 students (see Chapter 8). Through this combination of methods, conclusions could be drawn about how processes differ between social groups and contexts. Most importantly, it was possible to deduce which variables had the greatest impact on internet use in these contexts and groups.

9.5 Gradations of inclusion

Although policy and theoretical discussions have moved on from a focus on access provision, it is still unclear which other factors play a role, how to measure them, and which elements matter most in explanations of internet use. Kvansky (2006) argued that while diffusion

indicators are important, "...we must also consider the extent to which we are successful in reducing inequities that emerge when groups derive disparate benefits from their engagement with ICT" (p. 178). However, for most researchers the attempt to look at the range of digital inequalities is hindered by the confusion around basic measures of access and use.

Since young people have more freedom to use the internet at home than in other locations, and get acquainted with the medium on their own terms (Buckingham 2005; Kalichman et al. 2002; Livingstone 2003), home access was used in this thesis as an indicator of high quality access (Mumtaz 2001). The girls, African Caribbean and disabled teenagers had less access to the internet at home, which indicated lower internet status. While the LGB teenagers had the same levels of home access as heterosexual teenagers, this does not automatically signify similar levels of digital inclusion. Digital inclusion was argued to include more than just access, and further analysis showed that this type of inclusion is varied and multilayered.

The argument is made by different scholars that no upfront definition of what it means to be included can be given, and that academic research therefore should incorporate people's own estimates of inclusion (see also Anderson 2005; Anderson & Tracey 2001; Cushman & Klecun 2006; Haddon 2000; Selwyn 2004a, 2006). While a wide range of indicators was measured that could be related to inclusion, there were assumptions in this thesis about which behaviours are considered desirable (i.e. information seeking, civic interest and hobby uses) or undesirable (i.e. pornography and gaming) by policy-makers and educators (see also Livingstone & Millwood-Hargrave 2006). The focus of this thesis was not to put value on different uses, nor to determine which uses indicate digital inclusion and which do not. In the discussion of results more frequent use was therefore labelled as an advantage, whether or not adults would consider that specific type of use desirable.

All the teenagers who participated used the internet. This suggests that Warschauer (2002) and others (Cho et al. 2003; Selwyn 2004) were right (at least in relation to teenagers) when they argued that the digital divide needs to be reconceptualised as gradations of inclusions instead of focusing on use or non-use. However, clear cut divisions of internet use, in terms of entertainment versus information, as made by U&G researchers (for example Papacharissi and Rubin 2000), could not be established based on the findings of this thesis. Uses were

divided into three groups; general interest issues such as health, quizzes and civic interest pages; information and entertainment (i.e. infotainment) uses, related to activities such as looking for the news, sports and gaming; and leisure uses such as looking for music, travel and arts information. In the activities that teenagers said they were definitely going to do in the future there was a more traditional distinction between entertainment and information, and an additional third factor that separated boys from girls, which measured related to activities such as sports and pornography, traditionally considered male. This range of uses invites the question: What explains these different types and levels of use?

9.6 The processes behind internet use

The model presented in Figure 9.1 leads to a new way of thinking about internet use by different social groups. When macro, meso and micro frameworks are combined in this way, hypotheses arise that can be divided into two broad categories (Q3.2, p.88). The first 'general processes' category inspires questions about the level at which macro, meso and micro factors interact or mediate the relationship between socio-demographics and internet use (Q1.6, p.38). The second 'diverging processes' category leads to the notion that processes behind internet use might differ between groups and situations. In section 9.6.1 the first category is discussed while, in the following sections conclusions are drawn about how these general processes differ between groups (Q1.7, p.38), and whether the context in which these groups use the internet makes a difference to these processes (Q1.8, p.39).

9.6.1 The general processes behind internet use

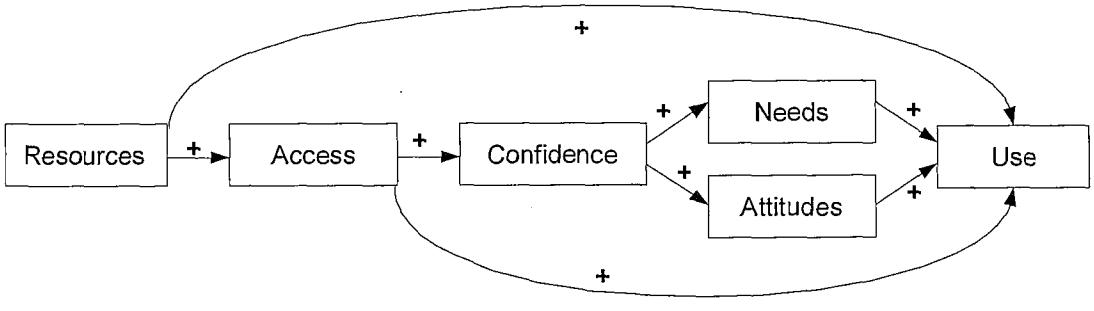
The construction of measures in the survey was informed by the interviews which highlighted three general issues as central to internet use by vulnerable groups according to the interviewees (Q1.5, p.38). The interviewees stressed the importance of various forms of anonymity and social identification as important issues in determining their appreciation of, and behaviour on, the internet. They also held beliefs about the skills and attitudes of certain groups towards the internet, which were classified by the researcher as indicating high or low internet status.

The survey instrument used in this thesis made it possible to test whether micro-level variables, that is confidence, attitudes, internet needs and the images regarding the internet,

mediated the influence of macro factors (i.e. resources and access), as predicted in Figure 9.1. The interviewees did not mention resources as a factor in determining internet use, but the survey showed that both macro and micro factors were associated with use, and that micro factors significantly mediated the association between macro factors and internet use. The survey results also show that micro factors mediated the effect of meso-level factors such as social identification and stereotypes on use, but indicated that meso-level variables do not have a significant mediating effect on the influence of macro factors. This means that the path between socio-demographics and social identification and anonymity in Figure 9.1 (p.348) cannot be supported.

In other words, the findings suggest that two parallel processes determine internet use, one from socio-demographics to use mediated by micro variables, and one from social identification to use also mediated by micro variables. The first parallel model is depicted in Figure 9.2 and combines the macro path model presented in Chapter 3 and the micro models presented in Chapter 4. The sequence of the variables is based on the existing theoretical digital divide, CMC, and U&G frameworks, but the existence of links is derived from their significance in path model testing.

Figure 9.2 Mediation of micro-level variables in the relationships between macro variables and use



The digital divide framework assumes a strong relationship between macro factors, confidence and internet use. In particular, it predicts that more resources lead to more access which, in turn, increases the skills of the person and therefore their use of the internet. The model presented in Figure 9.2 adds to this the influence of personal needs. Figure 9.2 also shows that one element that improves the perception these teenagers have of themselves as

internet users (Q2.5) is the access that they have to the internet. This higher level of self-efficacy subsequently influences which needs and attitudes they have towards the internet.

The processes that take place behind internet use seem, at first glance, to run along the lines of the digital divide model. However, contrary to predictions made on the basis of the digital divide framework, resources were also directly related to internet use, independent of their relationship with confidence. In addition, educational and material resources had differential effects. Educational resources were directly related to use, while the impact of material resources was mostly mediated by access. This supports the argument that, besides economic exclusion, other types of exclusion, based on, for example, educational capital might be important in determining specific uses (see also Anderson 2004; Livingstone 2003; Loader 1998; Selwyn 2004b; Stoneman & Anderson 2006; Wellman et al. 2001). As argued before, the findings also suggest that these processes can be related to social capital and that they take place independent of those based on economic capital.

Figure 9.3 shows the model that was constructed based on the findings which depicts how micro factors mediate the effect of meso-level variables by combining the theoretical models presented in Chapter 5 and Chapter 6.

Figure 9.3 Mediation of micro-level variables in the relationships between meso variables and internet use

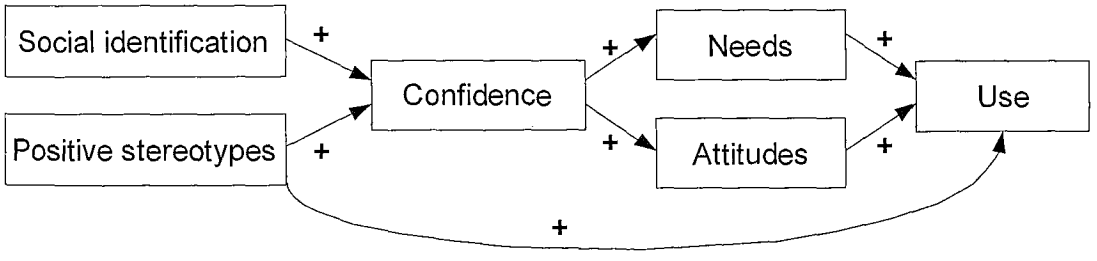


Figure 9.3 shows that exclusion processes, as proposed by social-psychological and Feminist frameworks, were partly supported by these findings since teenagers adjusted the image that they had of themselves based on the perceptions they had of group level characteristics (Q2.4). In support of Livingstone's (1998) agentic version of social constructionism (see also

van Dijk 2005; Lindlof 1991; Loader 1998), the findings suggest that social constraints at a group level have an impact on internet use through micro-level factors (Q2.1).

The model presented in Figure 9.3 does not argue that this is a process that takes place consciously, since stereotypes also had a direct effect on use in some circumstances that did not have a clear direct impact on self-perception. Therefore, while in general a higher level of confidence and awareness of social identity can be assumed to lead to more confidence, higher needs and more positive attitudes (Q2.5) and to broader use, other processes take place outside the awareness of teenagers that lead them to use the internet differently. These findings again offer support for the incorporation of a notion of social and cultural capital, this time in the form of meso-level variables. Social capital, when interpreted as comfort with one's social identity, and strong social ties, influenced the interaction with the internet positively.

However, when the different groups and conditions were compared, the findings suggest that context of use assumes a hybrid role between meso and micro frameworks, and might determine the extent of the effect of macro variables on use.

Figure 9.4 Mediation of micro-level variables between context and internet use

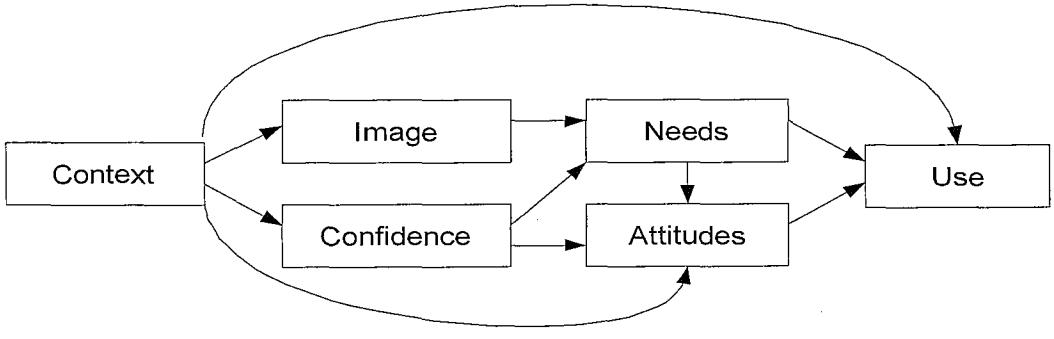


Figure 9.4 shows the micro processes behind internet use (Q2.6, p.66), and suggests that context had both indirect effects on use, through its effects on perceptions of self and of the internet, and direct effects on both attitudes and uses. The relative independence of context in its effects on use signifies that context is not just a physical space that limits opportunities of use, as suggested in micro approaches, but that it carries implications about social norms, as

supposed in meso-level models such as self-categorisation and SIDE frameworks. The explanation for these differentiating effects of context deserves further attention and will be discussed in section 9.6.3.

Processes behind use were not only associated with differences in context, but also varied for different types of use. A generalised conclusion based on the model fits presented in Chapter 7 is that, for most uses and locations, micro-level models significantly aid explanations of internet use, in addition to the traditional digital divide model that incorporates only resources, access and confidence as its main explanatory variables, whereas meso-level variables do not always contribute significantly. The main exception occurred for entertainment related activities. For this use, meso-level variables such as stereotypes and awareness of group identity also contributed significantly.

There were three factors that were repeatedly significant contributors to non-entertainment uses, and which could explain why in most cases the macro and micro models seemed to contribute significantly, while the meso models did not. On the one (micro) hand, the internet image and needs that the teenagers had of the internet were strong predictors of information and general interest uses; on the other (macro) hand, resources explained information type uses. In practice this means that a certain image of the internet leads to behaviour that corresponds to this image and that this effect was stronger for those with more resources.

In conclusion, choice or agency at a micro-level depends on the significance of this identity and the resources that group membership brings with it. The level of social identification does not depend on resources, nor consistently on group membership. Therefore micro variables mediate the effects of both macro and meso factors on internet use, while meso-level factors do not seem to mediate the effects of macro-level variables. The next section discusses how these general processes differ between different social groups with different social statuses.

9.6.2 Status and the processes behind use

Q1.4 asked which characteristics should be central to policy making to give all groups equal

digital opportunities. This raises the question of whether the same processes underlie use of the internet in different groups, or whether processes vary between different types of groups based on, for example, social and internet status. Hilary Armstrong, the UK's Minister of Social Exclusion, stated in a piece she wrote for the Guardian newspaper:

> "It's clear that general policies fail to reach [vulnerable groups]. And the lesson of the past decade is that in all areas of public services we need to personalise and target policies." (07/09/2006)

Those who are interested in digital inclusion are currently trying to incorporate this emphasis on targeted action into policy making, and encounter difficulties partly because there have been very few footholds on which to base this kind of policy. The findings show that the processes behind internet use as described in section 9.6.1 differ between social groups. Conclusions are drawn in the next section about differences between the gender, ethnic, higher and lower status groups, and about the processes that take place within these groups.

Gender and internet status

The findings showed that boys tend to use the internet for different things from girls, no matter what their social or personal characteristics. They suggested that differences between boys and girls were not only clear but also likely to persist. This supports one of the observations made on the basis of the interviews that gender is one of the most dominant factors in explaining internet use, and justifies the importance placed by Feminist scholars on understanding the complex relationship between gender and ICT use (see Faulkner 2002; Gill & Grint 1995; Paasonen 2002; Thomson 2005; Van Oost 2002; Wajcman 1991, 2000, 2004).

The internet is thus not a separate space in which offline differences are irrelevant and everyone is equal. The social status of the girls was not obviously higher or lower than that of the boys, but online they were disadvantaged in terms of internet confidence, attitudes and breadth of use (see also Adam 1996; Adam & Green 1998; Herring 1996, 1999). The variable that was most important in explaining the differences in use between the boys and girls was confidence. The girls' lower online confidence levels in comparison to the boys were argued to be the result of the subconscious internalisation of negative stereotypes about women's ICT skills. The findings suggest that the biggest change in girls' use could probably

be achieved by improving the perception they have of their technical online skills. One interesting finding was that a personal lack of confidence could be diminished by positively held conscious perceptions of women's skills in general. Thus, in those situations where the girls consciously held more positive perceptions of women's skills than the boys, the negative subconscious impact of gendered stereotypes diminished.

However, the findings from linear regressions suggest that, within the girls' group, the distinctions between high and low use are not only related to confidence but that social identification, context and image also influence use. When directing interventions targeted specifically at getting girls with low levels of use to appropriate the internet to the same extent as girls with high levels of use, the most effective intervention would be to motivate positive images of the internet, and strengthen their social support network in general and in relation to the internet. Within the boys' group, those with low levels of use could be encouraged to use the internet to an equal level as boys with high levels of use, by focusing interventions on micro variables, such as the perceptions they have of the internet and what they think their needs and their group needs are. It is important that policy-makers realise that differences between girls or between boys cannot be explained in the same way as differences between boys and girls.

In summary, the most important factors that are associated with differences between boys and girls are confidence and probably the stereotypes held in wider society. However, within the girls' group, increases in use would be achieved by focusing on a range of macro-, meso- and micro-level elements, while boys' use is associated mainly with micro-level and some meso-level elements.

Ethnicity, social and internet status

The African Caribbean teenagers were shown to be of low social and internet status in comparison with the other ethnic groups, that is they had less resources and access, and were less confident about their online skills, and used the internet less. Fewer resources in the African Caribbean group were related to less access to the internet at home and to less broad internet use. The Asian teenagers were somewhat disadvantaged in (home educational) resources but were in general of higher internet status. Social identification and stereotypes

did not distinguish between the teenagers of different internet statuses (the African Caribbean vs the Asian and White teenagers). However, when internet use was compared between groups of different social, but high internet, status (the Asian vs the White teenagers), social identity was one of the clearest influential variables. The main reason why the Asian teenagers used the internet more than the other ethnic groups is that they had more group esteem and therefore more personal confidence. This difference in social identification, which was also present for the African Caribbean teenagers, in comparison to the White teenagers did not diminish the negative effect that scarce resources had on the internet use of this low internet status group.

As was the case for the gender groups, within the ethnic groups different processes take place. For the low internet status African Caribbean teenagers, an intervention should focus on context of use, confidence and perceptions of the internet, to even out differences between individuals within the group; while, for the high internet status Asian and White teenagers, the emphasis should be on increasing frequency of use and confidence in those who have lower levels of use.

Similar intervention differences should be considered for disabled and LGB teenagers; however, the survey did not provide data about the processes within these groups since numbers were small, although the findings suggest that disabled teenagers are both socially and digitally disadvantaged.[106] Multiple deprivation of both a digital and social nature in the disabled group confirms the fears of those that argue that a digitised society risks increasing the social exclusion of those who could potentially benefit most from being digitally included (Dobransky & Hargittai 2006).

Conclusions about the processes behind use in different groups

The conclusion drawn from the findings presented in Chapters 4 to 6 is that, while the digital divide framework with its focus on resources and access seemed appropriate to explain the differences between the ethnic and ability groups, it could not explain the differences between boys and girls in entertainment uses, and was more appropriate to explain differences based on social status than on internet status. To explain differences in internet

[106] See section 9.5.

use between groups of different genders and different internet statuses, the socio-psychological meso and micro models seemed to be more appropriate. No differences were found between the LGB and heterosexual teenagers in their internet use or resources, so there is no reason to study the differences in the processes behind use - while these might exist, they lead to the same outcome of digital and socio-economic inclusion. Other social issues unrelated to digital inclusion are undeniably important for this group but fall outside the remit of this study.

The findings in relation to the processes within individual groups discussed in Chapter 7 showed that the number of variables that was needed to explain internet use by the low internet status girls and African Caribbean teenagers was greater, more varied, and of broader reach in terms of levels of analysis, than those needed to understand the processes behind use in the high internet status Asian, White and boys' groups. This echoes the observation Tolstoy (1877/2002) made in his famous novel *Anna Karenina* more than a century ago that those who are disadvantaged are so in many different ways, while the advantaged are more alike. This stresses the need for specific and targeted policies for those groups that are considered vulnerable or, more specifically, for those groups that have a low internet status.

9.6.3 Context and the processes behind use

Policy targeted at specific social groups is not sufficient to intervene in digital exclusion. The findings presented in this thesis show that the processes behind internet use do not only vary for different groups, they also vary by context. This section details how location and social context of use should be taken into consideration.

First, the influence of location is discussed in relation to the differences in the processes behind use at home, at school or in the future observed in the survey findings. Then, impact of social context is discussed, mainly referring to different types of anonymity and to how the presence and knowledge of implied or real others makes a difference to internet use. In the survey, context was implicitly assumed to be stable and a part of the every day circumstances in which these teenagers use the internet. Both anonymity and physical location were assumed to differ per social group in a constant manner as part of everyday routines. The experiment tested specifically whether changing the social context of internet use influences

what these teenagers do online. This adheres to the approach to context taken in self-categorisation, CMC and SIDE studies, in which social context is purposefully manipulated to test its effect on identity and behaviour (Culnan 1991; Joinson 2001; Lee & Nass 2002; Lee 2004; Postmes et al. 1998, 2000, 2001; Turner 2004; Walther 1992). The experiment assumes that social context and identity are flexible and not stable factors.

Location of use: Context, equalisation and compensation

In all locations examined in the survey (home, school and future use) the digital divide model fitted the data best, that is it gave the simplest explanation of internet use in all contexts. However, simplicity, although preferred by statisticians, does not mean that one obtains the best understanding of the processes that take place. There is a choice between depth and efficiency, a choice between a comprehensive model and using only the strongest explanatory factors. Here the choice was made for comprehensiveness. Earlier in this chapter, it was argued that micro models contributed to explaining all types of use in all types of context but if one looks at this type of model separately per location, than the general conclusion is that the micro model with its focus on anonymity, images, and needs fits better for school use than for use in other contexts. A similar general conclusion can be drawn about the macro model for home use, with its focus on resources and socio-demographics, and the meso model which was just as good at explaining future use as home use, with its focus on stereotypes and social identity.

It became clear early on in the analyses that the school context offered a different environment than future and home use, a finding that was confirmed again and again when investigating different types of use and when applying different models of analysis. The school was shown to be an equalising environment in terms of socio-economic inequalities. In other words, resources and access seemed to play an insignificant role at school, while they were important in the home and future use contexts.

Further support for the assumption that school is an equalising environment is that the variance in use at school was in general smaller than for the home environment. The notable exceptions were looking for civic interest sites, music and quizzes, for which there was more variance at school than at home and in the future. In the model that incorporated all levels of

variables it seemed that home access might have a negative effect on leisure use at school. This implies that those who cannot access the internet at home for leisure activities compensate for this lack of access by doing so at school.

In addition to the school environment diminishing the effect of resources, it might compensate for other inequalities that exist outside the school environment. That the school might serve to compensate for those who are disadvantaged can also be seen when examining those with different confidence and needs' levels. Those teenagers with less confidence in their internet skills, but superior in their use in comparison to their peers and family, used the internet more at school than those with more confidence and a feeling that they were equal to their peers. However, this was the case mainly for the African Caribbean teenagers and not for the White teenagers, for whom confidence was related to more use at school instead of less. This could indicate that the school environment is a safe place to improve skills for those who have less support in the community or from parents, in terms of internet expertise and resources.

There were remarkable similarities in the processes behind home use and the use teenagers said there were going to give to the internet in the future as observed through path analyses. In both resources, access, confidence and context played an important role, which emphasised the importance of macro and meso models in these contexts. However, the stepwise linear regressions showed that some factors weighed heavier at home than for future use. Gender differentiated both, but resources were more important in determining home use than future use. In contrast, social context or anonymity in use, and images and attitudes towards the internet, seemed to play a larger role for future use than for home use. Therefore it is not surprising that the macro digital divide model was found to be more appropriate for home use, and meso models (which incorporate gender, social context and attitudes) more appropriate for predicting future use.

The analyses showed that the traditional digital divide model is the most appropriate for the contexts in which it has been commonly applied: for home use and quantity of use. However, if researchers and policy-makers want to explain processes behind internet use in other contexts, such as at school and in the future, then different theoretical models are necessary

to understand why teenagers behave in certain ways. Improving people's resources has a small impact on internet use in these locations, while it does increase use at home.

Social context of use: Anonymity, peer pressure and stereotypes

The behaviours these teenagers showed in different contexts could be related to the pressure they felt to comply with what are considered the norms of use of their immediate social group (Mazalin & Moore 2004; Postmes et al. 2000, 2001a, 2001b; Sassenberg & Boos 2003). This might cause differences in use between the home and school environments that offer an explanation that goes beyond access provision at school as the equaliser.

One of the aspects that is different at home and school is the social context of use. Social context of use is traditionally measured as the level of anonymity in CMC and SIDE research. Anonymity indicates the extent to which other people have information about the person when they are interacting through computers (Culnan & Marcus 1991; Joinson 2001; Lee 2004; Postmes, Spears, et al. 2001). The definition of social context in this thesis was slightly wider, partly based on the differing interpretations of anonymity found through the interviews. Two types of physical anonymity were identified in this study: *school and home anonymity*. *Social anonymity* was used to refer to how often the teenager talked to others about what they did on the internet. All the previous can be considered internet anonymity in the offline environment, but the teenagers also put limits on what they revealed about their identity to others in online environments. This type of anonymity was called *online anonymity* and, the more actions they took to protect their identity, the more anonymous teenagers were considered to be online.

Anonymity had different effects in different locations. Physical anonymity was related to internet uses that are considered less desirable by adults at home and more desirable uses at school. Online anonymity resulted in an increase in entertainment and male (i.e. pornography and sports) future uses, especially for the boys, and a decrease in information and engagement needs.

All these findings suggest that, while at home the presence of others (i.e. parents) or the knowledge of online others increases uses that are considered desirable by adults, and decreases those that are considered undesirable, at school the reverse is the case. Presumably, using the internet alone at school takes pressure away from teenagers to do those things (i.e. gaming and pornography) that are considered necessary to belong to the group. This shows that while peer group norms can override individual needs and attitudes when it comes to communication media (Chung & Nam 2007), they do so more strongly when this peer pressure is considered important and relevant in the context. More detailed analyses showed that the peer pressure argument can be made more strongly for boys than for girls, since anonymity at school was related to less use of the internet for undesirable activities in this group, while home anonymity did the opposite for home use. When boys are at school and others are present they are more likely to play games online and look for sports; this then transfers into the home environment where they are more likely to look for pornography if no one is watching them at home, and when they generally use the internet with others at school. In the experiment the peer pressure argument could also be supported, since a neutral approach took away the need for the student to submit to the every day pressure of teenagers to show stereotypically gendered behaviour (see section 9.6.4).

Further specific differences between the groups in relation to social anonymity were revealing, especially in relation to the role that the internet plays in teenagers' lives. The girls who were less likely to have someone watching over their shoulder while they used the internet at home were less likely to use the medium at school. On the contrary, the African Caribbean teenagers, who were less likely to have someone helping them out at home, were more likely to use the internet at school. The hypothesis that school is a compensatory environment for a lack of access and interaction in relation to the internet with others at home should therefore be restricted to the African Caribbean group of teenagers, because the girls seemed to find support at home a motivator to use the internet more at school.

Social context as a proxy for social expectations

Earlier in this thesis (see Figure 9.4) it was suggested that social context might be the bridge between micro- and meso-level variables. However, in most circumstances, anonymity and

stereotypes were not directly related except in comparisons between low social status Asian and high social status White teenagers. For these groups online anonymity was related to more positive stereotypes about ethnic minorities, and was negatively associated with attitudes. This might suggest that in high internet status groups, anonymity stimulates the expression of ideas that are 'anti-establishment'; and that this same factor explains both negative attitudes towards technology and positive attitudes towards ethnic minorities and broad use, especially because the type of anonymity measured by online anonymity is strongly related to refusing to give information and trying to 'beat' the system (Teich, Frankel, Kling & Lee 1999). They do not trust technology to be able to protect personal or sensitive information (such as ethnicity) and hence have negative attitudes towards the internet. However, they are literate enough to beat the system and therefore use the internet extensively as long as they feel that they can protect their personal information.

There was only one way to test whether social context causes young people to change the perceptions of their group and their internet use and attitudes, and that was through an experiment (Q1.8). In the survey the teenagers were asked to describe the general circumstances under which they used the internet but, in the experiment, these circumstances were changed for them and the effects on their use were tested.

Causality and context: Changing the status quo?

The effect of priming certain social identities by using different modes of address depended on both the type of internet activity that was measured and the group to which the teenager belonged. The largest differences caused by social context were found in behaviour and cognitive strategies, and this effect was stronger for distinctions between the boys and girls than for distinctions between the ethnic groups.

The influence of context, group norms and affective commitment on internet use

In general, the importance of social identity did not change when the teenagers were addressed in different ways. Notwithstanding this lack of a change in 'affective commitment' (Ellemers, Kortekaas, & Ouwerkerk 1999) based on mode of address, the change in address did have an effect on the behaviour and cognitive strategies of these teenagers. The

assumption of SIT that awareness of (Spears & Lea 1994), and 'affective commitment' to, the group are pre-requisites for group norms to have an effect on behaviour or self-perception is therefore contested. The manner in which the adoption of group norms influences behaviour was argued to be subconscious, that is it was unrelated to awareness of social identity. Similar conclusions could be drawn from the survey results, since group membership was directly related to confidence without the conscious adoption of stereotypes. The findings in both the experiment and the survey suggest that Feminist stereotyping frameworks are more appropriate to explain the effects of mode of address than SIT frameworks, which assume awareness of group membership as a pre-condition for group norms to have an effect.

The few instances in which affective commitment changed the effect of social context showed that it was influential in information seeking, but less important for chat behaviour and strategies. The findings also suggest that social context has a bigger impact on those who consider their gendered or generational identity less important and that, for those for whom social identity is important, the effect of internalised group norms could be amplified by changes in mode of address.

The strongest effects of social context were found in the conditions in which the teenagers were identified on a group level (youth, gender and ethnicity conditions). The idea that being identifiable as a group member, but anonymous as an individual, leads to a greater adoption of group norms was thus supported (see Douglas & McGarty 2001; Joinson 2001a, 2001b, 2002, 2005; Postmes, Spears & Lea 1999; Postmes, Spears & Lea 2000; Spears & de Groot 2001). This corresponds to what was found in the survey where personal anonymity from parents and online others was related to more peer group centred behaviour at home and in the future. At school, however, being personally identifiable to the peer group was related to behaviour according to peer group norms, suggesting that, for teenagers in the diffusion stage of their identity development personal anonymity only has this effect when it is anonymity in relation to an (adult) out-group, and that being surrounded by peers represses personal identity in favour of the in-group norm.

Anonymity at a group level leads to the circumstances that, under CMC frameworks, have

been labelled equalisation (Dubrovsky et al. 1991; Hancock & Dunham 2001; Walther 1996). When group membership was not primed and personal characteristics were not known, as in the neutral condition of the experiment, group membership and status differences had less impact than when social identity was brought to the attention of the internet user.

Social groups and the influence of context

In the survey, the differences in use were shown to be larger between the boys and girls than between the ethnic groups, and the interviewees clearly distinguished between boys' and girls' skills but not between ethnic groups. When the girls were addressed as girls and the boys as boys in terms of the perception of their skills, the girls perceived themselves as less skilled and the boys considered themselves more skilled. Addressing the teenagers as young had even stronger effects in the same direction than addressing them based on their gender. This was argued to indicate that, when the teenagers were asked to think of themselves as part of the young generation, a comparison was made with opposite sex peers instead of with older generations. The youth prime was therefore in reality a highly gendered peer oriented frame. Since self-efficacy is considered to be an important predictor of the successful completion of a related task (Bandura 1996, 2003; Durndell & Haag 2002; Eastin & LaRose 2001), the finding that addressing girls in a neutral, non-gendered fashion will increase their self-efficacy levels to similar heights as those of boys seems to offer an easy solution to the 'digital gender gap'. Similarly, active information seeking strategies seemed to follow the same principle of gendered mode of address where the girls behaved and considered themselves less expert than the boys. Occasionally, findings were contradictory to the expectation that girls would behave less expertly in gendered conditions when the behaviour involved information seeking, and more expertly when it involved chat room behaviour. However, since girls are generally assumed to prefer communication applications, this finding still implies that the teenagers' behaviour was more stereotypically gendered in the non-neutral conditions than in the gendered conditions.

Self-categorisation theory assumes that people assign themselves to groups and adapt behavioural group norms only if the behaviour and group membership are considered relevant (Hollingshead 1996; Flanagin et al. 2002; Hancock & Dunham 2001). This assumption was supported by the experiment, since the boys and girls differed in their

behaviour relatively independent of mode of address, and so did ethnic minorities, although to a lesser extent. This suggests that gendered behaviour was considered more relevant than any differences in behaviour related to ethnicity, although ethnicity oriented behaviour could be considered more relevant in the right social context. This in turn contradicts the flexible idea of identity held by SIT scholars (Spears, Postmes, Lea & Wolbert 2002; Spears & Lea, 1994; Postmes et al. 2001; Stevens 2004; Yi & Shorter-Gooden 1993; Williams & Thornton 1998) because, although teenagers are many things at the same time, some aspects are more stable and more prominent than others.

In chat related tasks, the tendency was for the teenagers to select partners based on their group membership, that is based on their gender and ethnicity, and mode of address had relatively little impact on that[107]. The chat partner (especially by the boys) selected was mostly likely to be of the opposite gender and to be of a similar (ethnic) group (see also Boneva et al. 2006). This suggests that chat behaviour is related to the social pressure to select a partner instead of 'just a friend'. The use of gendered and ethnic group norms for specific activities supports the studies by Lee (2004) and Sassenberg and Postmes (2002) which stresses the importance of 'applicability' for groups norms to be used in certain contexts.

In conclusion, influencing the way in which the teenagers used the internet through a simple intervention based on social context was more apparent in relation to self-perception and cognitive strategies than in relation to behaviour. Behavioural patterns seem less susceptible to change and, especially in relation to chat room behaviour, strongly influenced by existing gender stereotypes. Further research is necessary to show whether repeated priming of certain social identities in relation to internet use, through, for example, public awareness campaigns, has more significant impacts on behaviour.

[107] While chat partner selection was tested in relation to familiarity with the chat partner, the results were difficult to interpret since no existing theoretical framework was able to explain the impact that mode of address had on this selection process.

9.7 Methodological queries and issues for further research

One of the aims of this thesis was to understand whether different methodologies could give new insights into the processes behind digital exclusion (Q1.3, p.22). The use of simple statistics has, in the past, led to simple solutions such as a focus on access and resources as the main determinants of digital exclusion. However, the application of multifaceted statistical and experimental procedures in this thesis has shown that the processes behind internet use are more complex than previous research suggests. Without the application of path analyses it would not have been possible to distinguish between the processes that underlie social status and those that underlie internet status (Q3.3, p.94) - a distinction that proved fruitful in understanding some unexpected differences between groups (see section 9.6.2.3). The detailed analysis of the importance of individual indicators, and their contradictory effect in different groups, would have been impossible without the application of hierarchical and multivariate regressions. Similarly, the experiment was the only method through which the (limited) causal effect of context could have been tested.

The theoretical framework of this thesis required designing measures at different levels of interpretation, and involved the combination of various theoretical models into one coherent model that used these newly constructed measures. The issues encountered in this design process offered insights about the direction that future internet research might take. Section 9.7.1 will reflect on the issues that were encountered in the construction of measures at each level of the theoretical framework, and discuss the implications of these for future research. Section 9.7.2 will discuss the limitations of the broader methodological design of this thesis and to which extent the findings can be generalised to other areas of research.

9.7.1 Reflection on measuring exclusion, social identity and internet use

Macro-level: Exclusion, vulnerability, status

Measuring exclusion is always contentious and varying definitions are proposed by different scholars and across disciplines. Therefore measures of exclusion have to be adapted frequently and this thesis was no exception.

Many indicators of socio-economic exclusion are difficult to apply to young people since they were designed for adults' circumstances. The measures for home educational and material resources used in this thesis were more practical, more informative, and differentiated clearly between young people of different groups.

The measures of internet status in this research were at first based on the interviews and the general literature on adults' internet use within different groups. The survey confirmed that online confidence, internet needs and internet attitudes are good indicators of internet status in young people since they were strongly associated with internet use. Following the tradition of expectation state theory (Berger 1972, 1980), it would be very useful if further research could test whether these perceptions of group level characteristics are recognised in wider society, by asking the general population to rank groups on these (and other) internet and social status indicators. This would make it possible to draw a mental map of how social and internet status are linked or distinct in people's consciousness. From the review of the literature that was used to design the experiment, it emerged that little is known about which activities and cognitive strategies indicate expertise or high status. The measures in the experiment might not have been able to pick up on expert and non-expert, or stereotypical and non-stereotypical, behaviour because of this lack of theoretical background. The differences between the social groups observed in the survey and the experiment, and the comments made in the interviews, offer a more complete picture which can inform future research in the construction of status measures by using conceilability of identity, internet images, internet needs, stereotypes and in-group confidence as indicators of inclusion.

Meso-level: Stereotypes and group norms

Very little research has been done into the perceptions that people have about the ICT use of different groups. The survey and experiment used in this study meant that it was even more unusual in applying quantitative methods to measure stereotypes about ICT use by vulnerable groups. In previous research, anonymity was argued to create a setting in which people feel more comfortable expressing negative attitudes towards other groups (Culnan & Marcus 1991; Douglas & McGarty 2001; Walther 1996). The findings of this thesis show, however, that stereotypes about groups' (especially women's) internet use characteristics were more

easily formulated by participants in the face-to-face interviews than in the anonymous surveys. One explanation could be that the interviewees were less aware of the stereotypical nature of their expressions within the wider topic of the conversation than when they were asked directly in the survey. These findings indicate that incorporating more general stereotype scales, such as those devised by Esses, Haddock, and Zanna (1993), that do not focus on only internet related characteristics, might improve the quantitative measurement of stereotypes as applied in this thesis. However, to really understand the way in which stereotypes are expressed in social situations, further qualitative research is necessary to inform and improve quantitative instruments which make generalisation from Feminist theory and statistical testing possible.

A related and promising avenue for further research was the importance of peer pressure and its relationship to anonymity. The measures for social and physical anonymity were consistent in their direct effect on general internet use, which shows that SIDE and CMC theories can be applied beyond their traditional focus on interaction with others through computers. The findings presented in this thesis suggest that experimental or ethnographic research, which places the teenagers in different physical locations and observes the effect of the presence of peers and adults on use, would be the most productive way of investigating this issue. There was evidence that the implied presence of others (through priming social identities) can have similar effects, and the use of the instruments used in the experiment in this thesis can be easily adapted to test the effect of social context on other types of behaviour of individuals.

Micro-level: Individual characteristics

Uses and gratifications (U&G) research tends to suffer from circular reasoning, that is the argument goes that when individuals use the internet in a certain way this must be because they have certain needs to use the internet that way. Thus often the dependent measure (use) becomes a way of measuring the independent measure (needs). This is an eternal problem of U&G research, to which the measures used in this research found a partial solution by asking two, or in fact three, separate questions which distinguished how participants saw the internet in general (image), what they thought the internet was important for (needs), and what they

did with the internet (use). However, the research was limited by the measurement of only internet related needs, and it could have been fruitful to have a fuller range of measures of the personal characteristics of the participants in the survey that fell outside the scope of U&G theory. While offline confidence was a proxy for this variable in the survey, the incorporation of traditional psychological scales, such as the extrovert-introvert scales, might have given other individual psychological explanations of behaviour. Use of these variables in combination with measures of internet needs would allow for comparisons with psychological research (e.g. Kiesler & Kraut 1992, 1994, 1999).

Gradations of exclusion

While scholars agree that measuring access or use vs non-use is not a productive way of looking at digital inclusion, little is known about which gradations of exclusion exist in actual use, especially amongst young people. The factor analyses in this thesis showed that the traditional categories of internet use did not apply to the teenagers - information and entertainment were hard to separate, and other categories seemed more determined by gendered uses than by any thematic similarity. Adult categories and ways of thinking might not apply to the mediated world of teenagers, in which entertainment and information are linked and communication is apparently highly gendered. Using a-priori categories based on research with adults would have led to an equivocal understanding of what internet use consists of in this younger group.

Since the start of this thesis project, new applications such as social networking sites have become popular amongst teenagers, and probably would have been a more natural environment for an experiment than the chat room, which is less frequently used by teenagers. Further research should also investigate how different generations understand different uses; what they define as entertainment, information or civic interest, amongst a wide range of uses that perhaps go beyond what was measured in this study (see also Bennet 1998, 2003).

9.7.2 Reflection on limitations: Cohorts, generations and lifestages

The research presented in this thesis is an account of the processes that took place behind internet use in certain groups of vulnerable teenagers in 2005 and 2006. The theoretical model was shown to be of consistent value in different environments and for different contexts, and can therefore be said to offer a base from which to look at other vulnerable groups and other generations. As with all survey and experiment based research, it is unclear whether the effects found are persistent over time or specific to this cohort of teenagers. Rapidly changing media environments and greater expertise in parents and teachers might change the circumstances for future teenage groups. Longitudinal studies, such as those undertaken by Anderson et al. (2001, 2005), are necessary to understand whether the processes detailed in this thesis are persistent across generations and over time. In the future, panel studies and repeated experiments could offer answers to questions about the influence of media literacy and repeated exposure to social identity priming. Similarly, the processes behind internet use might change for this cohort as they get older and enter a different life stage (see also Dutton & Helsper 2007). The value of this thesis lies therefore in the mapping of general processes of mediation by meso or micro indicators in relation to internet or social status, which are testable and are assumed to be consistent over time, rather than under the specific influence of individual variables.

The difference in experience between younger and older people makes it likely that a different subset of variables in the model and in the experiment would influence older generations. However, the same questions could be applied; for example, one could ask if older males feel social (peer) pressure to use the internet like teenage boys do. Similarly, while the model is assumed to be generally applicable, it would be pertinent to test whether the same vulnerable groups of adults show the same difference in processes behind internet use as these teenagers.

Unfortunately the number of LGB and disabled teenagers was relatively small and made more complex statistical analyses impossible, so the next step in research with teenagers should be to test whether the general assumptions about the relationship between status and the processes behind internet use can be confirmed for other vulnerable groups.

This thesis could not give a definitive answer to all these questions due to its focus on teenagers in education, but the approach used definitely offers a theoretical and methodological tool to help researchers study other groups, and assist policy-makers in decisions about digital inclusion strategies.

9.8 General conclusions

The findings from the interviews, survey and experiment can be distilled into four main conclusions.

The first conclusion regards methods. The use of path modelling and experimental techniques offered a methodological tool that allowed for the detailed and comprehensive study of the processes behind internet use. The further application of these techniques could aid academics and policy-makers who think it is necessary to shift away from simple but unsuccessful socio-economic solutions to digital exclusion, and are interested in understanding and examining the social and psychological processes behind it.

Second, different groups of teenagers require targeted approaches adapted to their internet use contexts, instead of a uniform digital inclusion programme which covers all groups and locations. Home support, a boost in internet self-efficacy, and positive gender related internet imagery are especially important in increasing internet use by girls at home and at school. Boys are generally advantaged in internet related matters and seem to increase their use at home in anonymous use circumstances, and at school when their internet needs are increased. Access at school can compensate for a lack of material and parental support at home, especially for African Caribbean teenagers. Disabled teenagers on the other hand, suffer from a lack of both resources and confidence and will therefore need attention on multiple levels.

Third, social identification and group norms (also interpreted as social capital) influence how teenagers think about themselves as internet users, and what they think is appropriate internet behaviour. In particular, internet use at school is subject to peer pressure, so that individual teenagers are unable to explore and develop their skills freely. For advantaged kids, this matters less because they have high quality access at home. Private and flexible access to the

internet at school is therefore important, especially for disadvantaged teenagers. Online communication and information seeking are susceptible to peer pressure that both pushes teenagers to comply with gender stereotypes and strengthens ethnic alliances. A neutral approach to communication with these groups, one that does not overtly specify group identity, might even out these differences.

Fourth, it was fruitful to think about exclusion and status in a different way by investigating social and digital exclusion as separate, but related, processes. The findings showed that the African Caribbean and disabled teenagers were both socially and digitally vulnerable to exclusion, the Asian teenagers, while socially disadvantaged, were digitally advanced, the girls were socially included but digitally disadvantaged, and the LGB teenagers did not show clear group level characteristics that would aid the interpretation of their internet use. This distinction between social and internet status was useful, especially in understanding which level of variables could explain the processes behind use. Micro-level, personal characteristics and macro-level, socio-economic issues determined the use of those who were digitally advantaged. However, those vulnerable to digital exclusion varied widely in which factors influenced their use, which emphasises the need for a multilevel approach to explanations of internet use for vulnerable groups with low internet status.

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Appendices

Appendix I Interview Guide

Ask for consent to interview and to record the interview

Introduction

Thank you for coming and agreeing to talk to me. I am recording this conversation so I don't have to take notes while we talk and to make sure that I will be able to remember what you have told me. This conversation will be confidential in the sense that I will never use your name or any other thing that might identify you in any future publications. I might use quotes from what you've said but they will always be incorporated in an anonymous way.

Do you have any questions about this before we start?

(If any questions regarding the topic of the interview)

I would like to talk to you about the internet and other media and what function they have in your life.

Internet in general

- What does the internet mean to you? How would you describe it?
- If you compare the internet with other media, how important is it in your life?
- How long have you been using the internet?
- Do you remember what you first did when you used the internet?
- Could you tell me how you came to use the internet?
- How often do you use the internet nowadays?
- When you are online now what do you do?
- What is your favourite activity online?

Physical context

- Where do you use the internet?
- Do you do different things at (location) with the internet than you do at (other location)?

Self-efficacy

- Do you consider yourself a skilled internet user?
- What are the things that you think you still need to learn?
- What are the things you know best how to do?

Changes over time

- Has your internet use changed over the years/months that you have been using it? Why do you think that is?

Importance of the internet in daily life

- Do you think the internet makes your life easier?
- If you would wake up tomorrow and the internet would be gone how terrible would that be for you?
- Are there things you can do online that you would not be able to do in real life?
- And vice versa, which things do you prefer to do face to face or using other media?
- If you would not be able to use the internet do you think you would spend more time with your family or friends? Or do other activities?

Ethnicity awareness online

- Do you write emails or chat online? (if yes)
    - Who do you write emails to or look to contact in chats
- How would you describe yourself online?
- Is being African Caribbean/gay/disabled relevant to you when you are online? Are you aware of your sexuality, ethnicity, disability when you are online?
- In general when you are online do you look for websites for African Caribbean, disabled, gay people, do you avoid them?
- Do you meet other people with the same ethnicity online?
- Have you ever pretended to be someone else? If yes...how?

Satisfaction with the internet

- How satisfied are you with what the internet has to offer?
- Do you think that the internet is a good medium for people from ethnic minorities, gay/lesbian people, disabled people?
- Do you think the internet is a useful tool for people from ethnic minorities, gay/lesbian people, disabled people?

Improvement of the internet

- Which hurdles do you perceive for afro-Caribbean people to use the internet?
- How do you think the internet could be made more accessible?

Closing

Are there any other things that you would like to add and that you feel you haven't been able to say before in this conversation we've had?

Thank you very much for participating, this has been really helpful!

Appendix II Questionnaire

the London School of **Economics** and **Political Science**

Survey of internet use by young people in London

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE ANSWERING

Thank you for participating in this study of young people's **experiences with the internet**. Your answers are valuable to us. **Take your time** to answer the questions; there are no right or wrong answers we would just like to get your opinion. It should take around 25 minutes to complete.

All the questions require you to tick one or more boxes. Please use only the boxes to mark your answer and not the rest of the questionnaire. If you do not want to answer a question, please tick the **don't want to answer** box.

If you have any queries, please ask the person who handed out this questionnaire for advice.

Please do not talk to other people while filling out this questionnaire. Whatever you answer in it is **completely confidential**. You will remain anonymous throughout the study so it will not be possible to identify you through your responses.

THANK YOU VERY MUCH FOR YOUR HELP

If you have any queries concerning this research or wish to find out more about the study, please contact Ellen Helsper at 020-79556199 or at E.J.Helsper@lse.ac.uk

FIRST SIX GENERAL QUESTIONS ABOUT YOU

1) Are you: (Tick one box)

Male? ☐

Female? ☐

2) How old are you? ☐ yrs

3) What is the LEVEL OF EDUCATION you are currently working towards? (Tick only one)

GCSE grade A-G ☐

A levels ☐

Certificate of higher education ☐

Diploma of higher education and further education, foundation degree, higher national diploma ☐

Bachelors degree, graduate certificates and diploma ☐

Masters degree, postgraduate certificate and diploma ☐

Other (please specify) ☐ _____

4) About how many BOOKS are there in your parents'/caretakers' home? Do NOT count newspapers, magazines or books for school. (Tick only one box)

None ☐ Between 51 and 100 ☐

Between 1 and 10 ☐ Between 101 and 200 ☐

Between 11 and 50 ☐ More than 200 ☐

5) How many CARS are there in your parents'/caretakers' home? (Tick only one box)

None ☐

One ☐

Two ☐

More than two ☐

6) What kind of school/college are you currently attending? (Tick only one box)

Secondary school ☐

Special school ☐

Sixth form college ☐

University ☐

Technical college ☐

Other (please specify) ☐ _____

THIS SECTION ASKS QUESTIONS ABOUT YOUR USE OF MEDIA

7) How many hours do you spend using the following media on an average WEEKDAY (Monday to Friday)?
(Don't worry if you don't know exactly, just give an estimate in hours and minutes)

Magazines	☐ hrs	☐ min	Television	☐ hrs	☐ min
Newspapers	☐ hrs	☐ min	Radio	☐ hrs	☐ min
Books	☐ hrs	☐ min	Internet	☐ hrs	☐ min
Computer (PC) or laptop not using the internet	☐ hrs	☐ min	Personal Audio (CD, Cassette, MP3)	☐ hrs	☐ min
Games console (Xbox, playstation, etc)	☐ hrs	☐ min			

8) How many hours do you spend using the following media on an average WEEKEND day?
(Don't worry if you don't know exactly, just give an estimate in hours and minutes)

Magazines	☐ hrs	☐ min	Television	☐ hrs	☐ min
Newspapers	☐ hrs	☐ min	Radio	☐ hrs	☐ min
Books	☐ hrs	☐ min	Internet	☐ hrs	☐ min
Computer (PC) or laptop not using the internet	☐ hrs	☐ min	Personal Audio (CD, Cassette, MP3)	☐ hrs	☐ min
Games console (Xbox, playstation, etc)	☐ hrs	☐ min			

9) Do you have a working computer at home? (By home we mean the place where you sleep most of the time after school/college/work)

Yes ☐ (Go to question 10)
No ☐ (Go to question 12)

10) For how long have you had a computer at home?

Less than half a year	Between a half and 1 year	Between 1-2 years	Between 2-4 years	Between 4-6 years	For more than 6 years
☐	☐	☐	☐	☐	☐

11) Do you have your own PC that you don't have to share?

Yes ☐
No ☐

THESE QUESTIONS ARE ABOUT YOUR USE OF THE INTERNET

12) Do you use the INTERNET or go online from any of these locations? (Tick as many boxes as apply)

Home ☐	An internet café ☐
Work ☐	A public library ☐
School/College ☐	*Other (Specify)* ☐ _____
A community centre or organization ☐	Never used the internet ☐ *(Go to question 64)*

13) How long have you been using the internet? (Tick only one box)

Less than half a year	Between a half and 1 year	Between 1-2 years	Between 2-4 years	Between 4-6 years	For more than 6 years
☐	☐	☐	☐	☐	☐

14) Overall, how often do you use the internet THESE DAYS (anywhere)? (Tick only one box)

- More than once a day ☐
- About once a day ☐
- A couple of times a week ☐
- About once a week ☐
- A couple of times a month ☐
- About once a month ☐
- Less often ☐
- Hardly ever ☐

THE FOLLOWING QUESTIONS ARE ABOUT YOUR USE OF THE INTERNET IN DIFFERENT PLACES

15) Which of these things have you looked for on the internet IN THE LAST 6 MONTHS at the places mentioned below? (Tick the box if you have looked for this topic/item at the place described at the top of the column. If you don't use the internet for anything at the place mentioned tick the box at the end of the column.)

	Home	College/ School	Work	Elsewhere	Haven't looked for this kind of information
News	☐	☐	☐	☐	☐
Hobby information	☐	☐	☐	☐	☐
Competitions and quizzes	☐	☐	☐	☐	☐
Civic interest issues (human rights, animal rights, legal rights etc.)	☐	☐	☐	☐	☐
Sports information	☐	☐	☐	☐	☐
Games	☐	☐	☐	☐	☐
Health information	☐	☐	☐	☐	☐
Porn (Sexually explicit material)	☐	☐	☐	☐	☐
Arts information (theatre, cinema, etc.)	☐	☐	☐	☐	☐
Travel information	☐	☐	☐	☐	☐
School related things	☐	☐	☐	☐	☐
Work related things	☐	☐	☐	☐	☐
Music	☐	☐	☐	☐	☐
Don't use the internet at this place	☐	☐	☐	☐	

Websites are made by different groups or individuals and are intended for or used by different people.

16) Which of the following sites have you ever visited? ..... (Tick all the boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience
☐	☐	☐	☐	☐	☐

17) What kind of sites do you go to if you look for ENTERTAINMENT (playing games, watching videos, listening to music etc)? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

18) What kind of sites do you go to if you look for SERVICES (Banking, government services)? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

19) What kind of sites do you go to for COMMERCIAL ACTIVITIES (Shopping) ? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

20) What kind of sites do you go to if you look for EDUCATION (Homework sites, online courses, your school's site etc)? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

21) What kind of sites do you go to to EXCHANGE IDEAS WITH OTHERS (mailing lists, bulletin boards, etc) ? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

22) What kind of sites do you go to to PASS TIME (surfing the web)? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

23) What kind of sites do you go to to COMMUNICATE WITH PEOPLE YOU KNOW (email, messenger, chat, etc)? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

24) What kind of sites do you go to to MAKE NEW FRIENDS (chats, dating sites, etc)? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

25) What kind of sites do you go to if you look to be PART OF A COMMUNITY (websites for likeminded people, role playing, etc.)? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

26) What kind of sites do you go to if you look to EXPRESS YOURSELF (Post writings or art, maintain website etc) (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

27) And do you look for information about your or others' RIGHTS (human rights, animal rights, etc) on any of the following sites? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

28) And do you look for information about EVENTS (exhibitions, public meetings, etc) on any of the following sites? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

29) And do you look for information about HEALTH (advice on medication, illness, etc) on any of the following sites? (Tick all boxes that apply)

Sites for women	Sites for men	Sites for disabled people	Sites for gays/ lesbians	Sites for ethnic minorities	Sites for other groups/a general audience	Don't do this
☐	☐	☐	☐	☐	☐	☐

30) How important is the internet for you for...

	Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important
Entertainment	☐	☐	☐	☐	☐
Services	☐	☐	☐	☐	☐
Commercial activities	☐	☐	☐	☐	☐
Exchanging ideas with others	☐	☐	☐	☐	☐
Pass time	☐	☐	☐	☐	☐
Communicating with people you know	☐	☐	☐	☐	☐
Making new friends	☐	☐	☐	☐	☐
Being part of a community	☐	☐	☐	☐	☐
Expressing yourself	☐	☐	☐	☐	☐
Education	☐	☐	☐	☐	☐
Information about your rights	☐	☐	☐	☐	☐
Information about events	☐	☐	☐	☐	☐
Information about health	☐	☐	☐	☐	☐

31) Which of the following things will you definitely do on the internet IN THE NEXT 6 MONTHS? (Tick all that apply)

Look for news ☐	Look for travel information ☐
Look for hobby information ☐	Download or listen to music ☐
Look for porn ☐	Look for school related things ☐
Participate in quizzes and competitions ☐	Look for work related things ☐
Look for civic interest issues ☐	Play games ☐
Look for sports information ☐	Look for arts information ☐

There are a lot of activities and things that go on in society. Some people think that certain media are more appropriate than others to undertake these activities on.

32) What do you think the INTERNET is currently GOOD AT providing? (Tick all that apply)

Entertainment ☐	Creating communities ☐
General information ☐	Information about rights ☐
Services ☐	Communicating with people you know ☐
Commercial activities ☐	Education ☐
Information about events ☐	Information about health ☐
Pass time ☐	Making new friends ☐
Exchanging ideas with others ☐	A platform for self expression ☐
	None of these ☐

THESE QUESTIONS ARE ABOUT WHO YOU INTERACT WITH WHILE YOU ARE USING THE INTERNET

33) Do you discuss what you do on the internet with your FRIENDS?

Never	Hardly ever	Sometimes	Frequently	Always
☐	☐	☐	☐	☐

34) Do you discuss what you do on the internet with your BROTHERS OR SISTERS?

Never	Hardly ever	Sometimes	Frequently	Always	Do not have brothers or sisters
☐	☐	☐	☐	☐	☐

35) Do you discuss what you do on the internet with YOUR PARENTS or caretakers?

Never	Hardly ever	Sometimes	Frequently	Always
☐	☐	☐	☐	☐

36) How do you MOSTLY use the internet AT HOME? (Tick only one box)

By myself ☐	With my father ☐
With one or more friends ☐	Don't use internet at home ☐
With a brother or sister ☐	Other (Please write down whom else is present) ☐ _____
With my mother ☐	Don't want to answer ☐

37) How do you MOSTLY use the internet at SCHOOL/COLLEGE ? (Tick only one box)

By myself ☐	With a teacher ☐
With one or more friends ☐	Don't use internet at school/college ☐
With a brother or sister ☐	Other (Please write down who else is present) ☐ _____
With friends and a teacher ☐	Don't want to answer ☐

38) How do you MOSTLY use the internet at WORK? (Tick only one box)

By myself ☐	Don't work ☐
With one or more friends ☐	Don't use internet at work ☐
With my boss ☐	Other (Please write down who else is present) ☐ _____
With a colleague ☐	Don't want to answer ☐

THE NEXT SET OF QUESTIONS RELATE TO THE VALUE THAT THE INTERNET HAS IN YOUR LIFE.

39) **Thinking about all different aspects of the internet, would you say the internet has an overall positive or negative effect on your life?**

Very positive	Somewhat positive	No effect	Somewhat negative	Very negative
☐	☐	☐	☐	☐

40) How much do you AGREE with the following statements?

	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
Overuse of the internet may be addictive	☐	☐	☐	☐	☐
There are unlimited possibilities of the internet that have not been thought of yet	☐	☐	☐	☐	☐
Use of the internet improves people's standard of living	☐	☐	☐	☐	☐
The internet is a fast and efficient means of gaining information	☐	☐	☐	☐	☐
The internet's complexity intimidates me	☐	☐	☐	☐	☐
Life is easier with the internet	☐	☐	☐	☐	☐
The internet is frustrating to work with	☐	☐	☐	☐	☐

41) Do you FEEL CONFIDENT ..... (if you have never done the thing mentioned, guess how confident you would feel if you had to do it)

	Very unconfident	Fairly Unconfident	Neither confident nor unconfident	Fairly Confident	Very confident
Downloading documents from the internet	☐	☐	☐	☐	☐
Understanding terms and words relating to the internet	☐	☐	☐	☐	☐
Trouble shooting internet problems	☐	☐	☐	☐	☐
Explaining why a task will not run on the internet	☐	☐	☐	☐	☐
Using the internet to gather information	☐	☐	☐	☐	☐
Installing software that can be found on the internet	☐	☐	☐	☐	☐
Cleaning a computer of viruses	☐	☐	☐	☐	☐
Downloading music from the internet	☐	☐	☐	☐	☐
Making new friends on the internet	☐	☐	☐	☐	☐
Participating in a discussion online	☐	☐	☐	☐	☐
Sending an email to ask an expert for advice	☐	☐	☐	☐	☐

42) In comparison with your FRIENDS how good do you think you are at using the internet?

Beginner ☐ Intermediate ☐ Advanced ☐ Expert ☐

43) In comparison with your PARENTS or caregivers how good do you think you are at using the internet?

Beginner ☐ Intermediate ☐ Advanced ☐ Expert ☐

44) In comparison with your BROTHERS OR SISTERS how good do you think you are at using the internet?

Beginner ☐ Intermediate ☐ Advanced ☐ Expert ☐ Do not have brothers or sisters ☐

45) Imagine that you woke up tomorrow to find that computers had vanished. How much would you miss being able to use one?

Won't miss at all ☐ Miss a little ☐ Miss a lot ☐

46) **Imagine that you woke up tomorrow to find that the internet had vanished. How much would you miss being able to go online?**

Won't miss at all	Miss a little	Miss a lot
☐	☐	☐

47) **Imagine that you woke up tomorrow to find that television had vanished. How much would you miss being able to watch television?**

Won't miss at all	Miss a little	Miss a lot
☐	☐	☐

48) **Imagine again that you woke up tomorrow to find that the internet had vanished. Would you ....**

	Much less	A bit less	No change	A bit more	Much more
Spend more or less time face to face with your family?	☐	☐	☐	☐	☐
Spend more or less time face to face with your friends?	☐	☐	☐	☐	☐
Communicate more or less frequently with your family?	☐	☐	☐	☐	☐
Communicate more or less frequently with your friends?	☐	☐	☐	☐	☐
Communicate more or less frequently with other people at school?	☐	☐	☐	☐	☐

49) **Would you say that you are now using the internet more or less than you were A YEAR AGO?**

Much less	A bit less	No change	A bit more	Much more	Don't know
☐	☐	☐	☐	☐	☐

50) **Now looking ahead--do you think that A YEAR FROM NOW you will be using the internet more or less than now?**

Much less	A bit less	No change	A bit more	Much more	Don't know
☐	☐	☐	☐	☐	☐

51) **Now turning to situation in THE COUNTRY as a whole--do you think that during the NEXT YEAR people will start using the internet more or less?**

Much less	A bit less	No change	A bit more	Much more	Don't know
☐	☐	☐	☐	☐	☐

THESE QUESTIONS ARE ABOUT THE INFORMATION YOU GIVE ABOUT YOURSELF ON THE INTERNET.

52) Have you ever given out PERSONAL INFORMATION on the internet? (Tick only one box)

Yes ☐ (Go to question 53)

No ☐ (Go to question 54)

Don't want to answer ☐ (Go to question 54)

53) What kind of information was this? (Tick as many boxes as apply)

Name ☐	Age ☐
Address ☐	Ethnicity ☐
Telephone number ☐	Level of education ☐
Gender ☐	Disability ☐
Health circumstances ☐	Email address ☐
Sexual preference ☐	Other (please specify) ☐ _____

54) Have you ever REFUSED TO give out personal information on the internet? (Tick only one box)

Yes ☐ (Go to question 55)

No ☐ (Go to question 56)

Don't want to answer ☐ (Go to question 56)

55) What kind of information was this? (Tick as many boxes as apply)

Name ☐	Age ☐
Address ☐	Ethnicity ☐
Telephone number ☐	Level of education ☐
Gender ☐	Disability ☐
Health circumstances ☐	Email address ☐
Sexual preference ☐	Other (please specify) ☐ _____

56) Have you ever given out misleading or FALSE INFORMATION yourself on the internet?

Yes ☐ (Go to question 57 on next page)

No ☐ (Go to question 59 on next page)

Don't want to answer ☐ (Go to question 59 on next page)

57) What kind of information did you change?

Name	☐	Age	☐
Address	☐	Ethnicity	☐
Telephone number	☐	Level of education	☐
Gender	☐	Disability	☐
Health circumstances	☐	Other (Please specify)	☐ _____
Sexual preference	☐		

58) Why did you give out this false information?

59) Have you ever PRETENDED TO BE SOMEONE or something else on the internet?

Yes ☐ (Go to question 60)

No ☐ (Go to question 62)

Don't want to answer ☐ (Go to question 62)

60) What did you pretend to be?

61) Why did you pretend to be this person/character?

62) Have you ever used a NICKNAME or screen name on the internet?

Yes ☐ (Go to question 63)

No ☐ (Go to question 64 on next page)

Don't want to answer ☐ (Go to question 64 on next page)

63) Why did you use a nickname or screen name?

THESE QUESTIONS ARE ABOUT DIFFERENT GROUPS IN SOCIETY AND YOUR VIEW OF HOW THEY COULD USE THE INTERNET

64) How IMPORTANT do you think the internet COULD BE in supporting the following groups?

	Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Extremely important
People from ethnic minorities	☐	☐	☐	☐	☐
Gays/lesbian people	☐	☐	☐	☐	☐
Disabled people	☐	☐	☐	☐	☐
Women	☐	☐	☐	☐	☐
Young people	☐	☐	☐	☐	☐
The elderly	☐	☐	☐	☐	☐

Don't want to answer ☐

65) If you would have to compare these groups with other groups, how SKILLED do you think they are in using the internet?

	A lot less skilled	A little less skilled	The same	A little more skilled	A lot more skilled
Younger in comparison to older people	☐	☐	☐	☐	☐
Ethnic minorities in comparison to the majority ethnic group	☐	☐	☐	☐	☐
Gays in comparison to heterosexuals	☐	☐	☐	☐	☐
Women in comparison to men	☐	☐	☐	☐	☐

Don't want to answer ☐

FINALLY THESE QUESTIONS ASK YOU TO TELL US ABOUT YOU AND YOUR EVERYDAY LIFE. REMEMBER THAT EVERYTHING YOU SAY IS CONFIDENTIAL AND THAT NOBODY WILL BE ABLE TO IDENTIFY YOU ON THE BASIS OF YOUR ANSWER TO THESE QUESTIONS.

66) How much do you AGREE with the following statements

	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
I have got what it takes to make it in this world	☐	☐	☐	☐	☐
I feel good about myself	☐	☐	☐	☐	☐
I can do most things just as well as others	☐	☐	☐	☐	☐
I generally feel like a failure	☐	☐	☐	☐	☐
I am different from other people	☐	☐	☐	☐	☐
I am generally satisfied about myself	☐	☐	☐	☐	☐
I have nothing to be proud of	☐	☐	☐	☐	☐
I see myself as someone with individual characteristics	☐	☐	☐	☐	☐

67) Do you feel like you are part of a community?

Never	Hardly ever	Sometimes	Very often	Always	Don't want to answer
☐	☐	☐	☐	☐	☐

68) Do you feel that you have people you can fall back on whatever problems you have?

Never	Hardly ever	Sometimes	Very often	Always	Don't want to answer
☐	☐	☐	☐	☐	☐

69) What ethnic group would you say you belong to?

Asian Indian ☐	Black Caribbean ☐
Asian Pakistani ☐	Black African ☐
Asian Chinese ☐	Black Other ☐
Asian Other ☐	Mixed ☐
White British ☐	Other (Please write down which) ☐ _____
White Other ☐	Don't want to answer ☐

70) How important do you think your ethnicity is in your daily life?

Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important	Don't want to answer
☐	☐	☐	☐	☐	☐

71) How much do you agree with the following statements?

	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
I am often aware of my ethnicity	☐	☐	☐	☐	☐
I feel good about being part of this ethnic group	☐	☐	☐	☐	☐
I wish no one could tell what my ethnicity is	☐	☐	☐	☐	☐
I like belonging to this ethnic group	☐	☐	☐	☐	☐
I would rather belong to another ethnic group	☐	☐	☐	☐	☐
It has a great impact on my daily life that I am part of this ethnic group	☐	☐	☐	☐	☐
			Don't want to answer	☐	

72) Do you consider yourself to be disabled in any way?

Yes ☐ (Go to question 73)

No ☐ (Go to question 79 on the next page)

Don't want to answer ☐ (Go to question 79 on the next page)

73) Do you have any of the following physical or mental conditions? (Tick all that apply)

Dyslexia ☐	Multiple disabilities ☐
Blind/Partially sighted ☐	Mental health difficulties ☐
Deaf/Hearing impairment ☐	Other disability (please write down which) ☐ _____
Wheelchair user/Mobility difficulties ☐	Don't want to answer ☐
Learning difficulties ☐	

74) How long have you had this physical or mental condition? (Tick only one box)

Less than 6 months	Between 6 months and 1 year	Between 1 year and 4 years	Between 4 years and 10 years	More than 10 years	My whole life
☐	☐	☐	☐	☐	☐

75) Are other people aware of your disability? (Tick all that apply)

No, no one knows	Yes, (some of) my friends	Yes, my parents	Yes, my brother or sister	Yes, Others
☐	☐	☐	☐	☐

76) If you answered NO to question 75 please go to question 77.
If you answered YES to question 75. How much do you agree with the following statement?
I wish other people wouldn't be aware that I am disabled? (Tick only one box)

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
☐	☐	☐	☐	☐

77) How important do you think this disability is in your daily life?

Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important
☐	☐	☐	☐	☐

78) How much do you agree with the following statements? (Tick only one box per statement)

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
I feel good about being a disabled person	☐	☐	☐	☐	☐
I don't mind being disabled	☐	☐	☐	☐	☐
I would rather not be disabled	☐	☐	☐	☐	☐
It has a great impact on my daily life that I'm disabled	☐	☐	☐	☐	☐
I am often aware of my disability	☐	☐	☐	☐	☐
			Don't want to answer	☐	

79) Do you think you are mainly attracted to..... (Tick only one)

People of the same sex as you? ☐ (Go to question 80)
People of the opposite sex? ☐ (Go to question 84 on the next page)
Both people of the same and the opposite sex as you? ☐ (Go to question 80)
Don't know ☐ (Go to question 84 on the next page)
Don't want to answer ☐ (Go to question 84 on the next page)

80) Are other people aware of your sexual preference? (Tick all that apply)

No, no one knows	Yes, (some of) my friends	Yes, my parents	Yes, my brother or sister	Yes, Others	Don't want to answer
☐	☐	☐	☐	☐	☐

81) **If you answered NO to question 80 please go to question 83.**
If you answered YES to question 80. How much do you agree with the following statement?
I wish other people wouldn't be aware of my sexual preference? (Tick only one box)

Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
☐	☐	☐	☐	☐

82) **How long have other people known about your sexual preference?**

Less than 6 months	Between 6 months and 1 year	Between 1 year and 4 years	Between 4 years and 10 years	More than 10 years
☐	☐	☐	☐	☐

83) **How much do you agree with the following statements?** (Tick only one box per statement)

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
I feel good about being gay/bisexual	☐	☐	☐	☐	☐
I don't mind being gay/bisexual	☐	☐	☐	☐	☐
I would rather not be gay/bisexual	☐	☐	☐	☐	☐
It has a great impact on my daily life that I'm gay/bisexual	☐	☐	☐	☐	☐
I am often aware of my sexual preference	☐	☐	☐	☐	☐
			Don't want to answer	☐	

84) **How important is this sexual preference in your daily life?**

Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important	Don't want to answer
☐	☐	☐	☐	☐	☐

You told us in question 1 that you are either male or female.

85) **How important do you think it is in your daily life that you are male/female (delete as appropriate)?**
(Tick only one box)

Very unimportant	Somewhat unimportant	Neither important nor unimportant	Somewhat important	Very important	Don't want to answer
☐	☐	☐	☐	☐	☐

86) How much do you agree with the following statements?

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
I feel good about being the gender that I am	☐	☐	☐	☐	☐
I wish no one could tell what my gender is	☐	☐	☐	☐	☐
I am often aware of my gender	☐	☐	☐	☐	☐
I like being of the gender that I am	☐	☐	☐	☐	☐
I would rather be of the opposite sex	☐	☐	☐	☐	☐
My gender has a great impact on my daily life	☐	☐	☐	☐	☐

THE NEXT QUESTION IS THE LAST ONE IN THIS SURVEY

87) Is there anything you would like to add about the internet or about this questionnaire that you have not been able to express?

Thank you very much for participating and giving some of your time to help us out. If you are interested in getting a copy of the report in which the results of this survey are discussed, please contact drs. Ellen Helsper at E.J.Helsper@lse.ac.uk

Appendix III Experimental Script

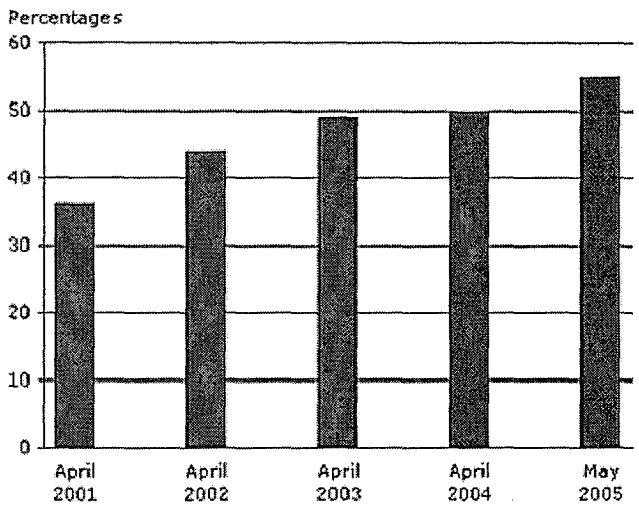
LSE 2006

Research Project about Internet Use

The study that you will be participating in is partly based on a report written by the Mayor of London Office (MLO) and information provided by the Office of National Statistics (ONS). The study builds on these reports and is interested in knowing how people use the internet. Please read the following information provided by the MLO and the ONS, it will take only a minute to read and gives some background information that you might be interested in before you start your participation in this research project.

Internet Access: 13.1 million households online

(The information in the following report was provided by the MLO and ONS)



Over half of households in Great Britain could access the Internet from home in May 2005. Statistics reveal that internet adoption in Britain varies by geography and socio-economic factors. Connectivity in London and the South East was the highest amongst UK regions at 50 per cent. Just under one third of adults had never used the Internet in May 2005.

Other factors affecting the adoption and use of the internet are life characteristics such as age, gender, disability and ethnicity. For example, younger people are much more likely to use the internet than older people and there is some evidence that they have greater internet expertise than their parents.

The table that follows shows how internet use is different in different groups.

Internet use by gender, age, ethnicity, and ability			
		%	Source
Total		68	National Statistics Omnibus Survey 2005
Gender	Men	71	
	Women	66	
Age-groups	16-24	94	
	25-44	88	
	45-54	72	
	55-64	54	
	65+ 1	22	
Ethnicity	White British	45	Londoners Online (London Mayors Report 2002)
	White Irish	39	
	Mixed race	45	
	Asian (incl Chinese)	50	
	Black Caribbean and other	38	
	Black African	44	
	Other	49	
Ability	Disabled	36	Dfes 2001
	Not disabled	55	

One can see in this table that men use the internet more than women, younger people more than older people and some ethnic groups also seem more or less connected than others. Additionally there seems to be a lower use of the internet by persons with a disability than by those without a disability.

There might be some very good reasons why certain groups use the internet less than others, but little is known about what they actually do when they are online and how they evaluate websites. More research is needed to find out what people do and how they make decisions when they are online.

^

To continue participating in this study please click on the box below:

Continue

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Research Project about Internet Use

Please type in both School Identification Number and the Password to participate in this research.

School Identification Number: [ ]

Password: [ ]

*Your School Email Address: [ ]

* To be able to participate in the £25 voucher raffle we need to know your Email Address. This email address will NOT be used for any other purposes; if you are not contacted by October 1 on this email address then we are afraid that you are not the winner. To be able to participate in the raffle you will also need to complete all tasks.

You do not have to give your email to participate in the project, however, you will not be able to participate in the raffle if you do not give your email address.

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Research Project about Internet Use

Welcome and thank you for participating in this research project about internet use.

You will have to go through the following 3 steps to complete your participation in this project.

1. You will be asked to answer some **questions about yourself**. These questions are asked for classification purposes only. No one will be able to link these answers to you personally, because you will be giving your answers **anonymously**.
2. You will be then asked to **complete 3 assignments** on the internet.
3. You will be asked a few **questions about your general internet use**.

This should take no more than 15 minutes of your time.

We detected that you did not provide your email address so you will not be able to participate in the raffle.

Continue

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Research Project about Internet Use

Step 1. Questions about you

1. How old are you?

- 15
- 16
- 17
- 18
- 19
- 20
- 21 or older

2. Are you

- Female
- Male

3. What kind of educational institution do you currently attend?

- Secondary school
- Sixth Form
- Technical College
- University
- I am not in education, I work
- I am not in education, I am unemployed
- Other (Please state below within 20 words)

50 characters left

4. Which ethnic group would you say you belong to?

- White British
- White Other
- African or Caribbean
- Asian Chinese
- Asia Indian
- Asian Other
- Arabic
- Mixed
- Other
- Don't want to answer

5. Where do you live?

- Greater London Area
- South East England (not London)
- North East England
- South West England
- Yorkshire and Humberside
- East Midlands
- West Midlands
- Wales
- Northern Ireland
- Scottland
- I do not live in the UK

Please check the correctness of your answers before pressing the "Continue" button!

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Research Project about Internet Use

Thank you for answering those questions. Let us now explain to you why we are doing this research.

In this project we are trying to understand **how you/women/men/African Caribbean people/Asian people/young people use the internet and how you/they look for information online**. To understand better how this works for you/ as a women/men/African Caribbean people/Asian person/young person, we would like to ask you to look for a few things online through a search engine and answer questions about why you did what you did while you were searching.

The program we use registers which sites you go to, but the researchers will not be able to identify you personally through your answers. **Your anonymity is guaranteed!**

We ask you to do nothing different than you would do in real life when you go online and use search engines. Let us know if you have any trouble with the computer or the program by emailing e.j.helsper@lse.ac.uk

Please follow the instructions on the screen carefully and start by clicking the button below.

Have fun!

Continue

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Research Project about Internet Use

Step 2. Assignment 1: Rights

Suppose you saw a television program that got you interested in human rights. In relation to these rights it mentions that according to the UN:

'Everyone is entitled to all the rights and freedoms set forth in the Universal Declaration of Human Rights, without distinction of any kind, such as **race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status....'**

When you click on the button below you will be taken to a search engine that works similar to other search engines (i.e. Google, Yahoo!, Alta Vista, HotBot, etc.). Please, **enter the search words** that you would use to find information on your (human) rights

You will get search results, **click on the links** that you would probably go to for information.

After you have clicked on the link and surfed the webpage(s) the programme will automatically redirect you to the next assignment.

Continue to search engine

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search

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Search Results for: **human rights**
Results 1 - 10 of about 152,000,000

Which way's south? - Asian values and universal human rights By ...
Human rights: a recent invention. Cold War. Challenge from 'Asian Values' ...'Asian values' and Orientalism. Human rights, as specified in the Universal ...
http://www.sfdonline.org/Link%20Pages/Link%20Folders/Human%20Rights/asianvalues1.html - 52k -

Human Rights Watch - Defending Human Rights Worldwide
Organization dedicated to protecting the human rights of people around the world, standing with victims and activists to bring offenders to justice, ...
http://www.hrw.org/ - 19k -

Convention on the Rights of the Child
The human rights of children and the standards to which all governments must ...The Convention protects children's rights by setting standards in health ...
http://www.unicef.org/crc/crc.htm - 10k -

Women's Human Rights Resources
Extensive reference library on women's rights.
http://www.law-lib.utoronto.ca/Diana/ - 6k -

OneWorld Asia Home / Partners / Partner directory / Asian ...
Asian Human Rights Commission. AHRC is an independent non-governmental body promoting greater awareness and realization of human rights in the Asian region. ...
http://southasia.oneworld.net/contact/company/view/776 - 21k -

The Human Rights Web Home Page
Human rights resources including links to relevant documents
http://www.hrweb.org/ - 3k -

The Human Rights Act - what does it mean for Black People
Under the new Human Rights Act, your lawyer can argue that it is, ... African Caribbean

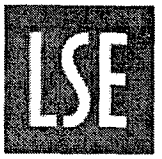
boys are six times as likely as white boys to be excluded from ...
http://www.obv.org.uk/education/hra-blackpeople.html - 13k - 30 Aug 2005 -

Black Information Link
a violation of human rights' for example via the monitoring and analysis of ... organisation demonstrating the benefits of African, Caribbean and Asian ...
http://www.blink.org.uk/subsections.asp?grp=47 - 23k -

Women's Human Rights: Amnesty International's Human Rights Concerns
Amnesty International USA's Women's Human Rights Action Network works closely with women ... Call for Protections for Women's Rights in Iraqi Constitution ...
http://www.amnestyusa.org/women/index.do - 19k -

CRIN: Child Rights Information Network
The Child Rights Information Network (CRIN) is a network of child rights organizations that work to improve the lives of children.
http://www.crin.org/ - 26k - 27 Aug 2005 -

T o o o o o o g o
Result page: **1** 2 3 4 5 6 7 8 9



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7. What was the most important reason you clicked on the first link that you clicked on?

- Because it was the first one
- Because the website seemed most relevant
- Because the website seemed the most interesting
- Because the website seemed the most reliable
- For no particular reason
- Other reason (Please state in the textbox below)

100 characters left

8. On a scale from 1 to 5, where 1 means not interested at all and 5 means very interested, how would you rate your interest in the topic of human rights? (Click on the ONE box that you think reflects your answer best)

Not interested at all 1 2 3 4 5 Very interested

9. On a scale from 1 to 5, were 1 means not important at all and 5 means very important, do you think that for **you/women/men/African Caribbean people/Asian people/young people** human rights are an important issue? (Click on the ONE box that you think reflects your answer best)

Not important at all 1 2 3 4 5 Very important

Please check the correctness of your answers before pressing the "Continue" button!

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Step 2. Assignment 2: Health advice online

You're feeling a bit ill and are not sure what it is (you've got fever, headache, stomach ache...you feel lousy). You decide that you would like to find out more about what's bothering you.

When you click on the button below you will be taken to a search engine that works similar to other search engines (i.e. Google, Yahoo!, Alta Vista, HotBot, etc.). Please, **enter the search words** that you would use to find information about your health.

You will get search results, **click on the links** that you would probably go to for information.

After you have clicked on the link and surfed the webpage(s) the programme will automatically redirect you to the next assignment.

Continue to search engine

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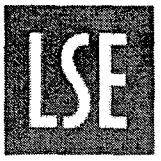

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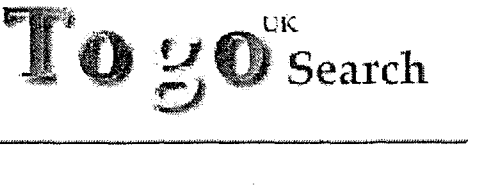

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Search Results for: **health**
Results 1 - 10 of about 152,000,000

Wired for Health - Young People's Health Network
We wish to inform you that Young People's Health Network (YPHN) activities, ...However, Health Promotion with Young People: an introductory guide to ...
http://www.wiredforhealth.gov.uk/cat.php?catid=861 - 15k - 28 Nov 2005 -

CCM database of African-Caribbean health issues
A lack of understanding of African-Caribbean attitudes to health and illness on the part of healthcare professionals in the UK who interact with these ...
http://www.kcl.ac.uk/depsta/ccm/CCM_database_info.html - 8k - 30 Aug 2005 -

iVillage - The Internet for Women: Discussing Women's Issues
Get information on women's health issues, relationships, diet and fitness, parenting, work and more. Interact with iVillage tools such as the pregnancy ...
http://www.ivillage.com/ - 20k -

International Journal for Equity in Health | Abstract ..
While the Pan Asian community is composed of multiple, ethnic subgroups, it is often treated as a single group for which one health promotion program will ...
http://www.equityhealthj.com/content/2/1/12/abstract - 15k - 30 Aug 2005 -

BBC - Health - Womens health - Women's health
Welcome to the section covering women's health concerns and wellbeing.
http://www.bbc.co.uk/health/womens/ - 38k -

African Caribbean Medical Society
Medical Society for African and Caribbean Medical Doctors of UK. ... and to advise and discuss health matters relevant to the African Caribbean community. ...
http://www.acms.org.uk/ - 10k -

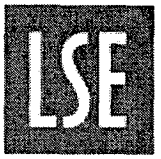
NHS Direct
The 24 hour nurse-led telephone advice service run by the NHS. Provides information on the diagnosis and treatment of common conditions.
http://www.nhsdirect.nhs.uk/ - 35k - 30 Aug 2005 -

WHO | World Health Organization
All information you need about common illnesses and their cures....fever, diarrhea, headaches, malaria, avian flu ...
http://www.who.int/en/ - 22k - 30 Aug 2005 -

Department of Health
Download the full Directory of Asian Initiatives in Portable Document Format PDF ... The Department of Health attaches great importance to ensuring that the ...
http://www.minorityhealth.gov.uk/asiandirectory.htm - 18k -

Health advice for students and young people from StudentHealth.co.uk
Extensive information for students and young people on travel, sport, sexual and other health issues.
http://www.studenthealth.co.uk/ - 27k -

T o o o o o o g o
Result page: 1 2 3 4 5 6 7 8 9



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11. Why did you click on the first link that you clicked on?

- Because it was the first one
- Because the website seemed most relevant
- Because the website seemed the most interesting
- Because the website seemed the most reliable
- For no particular reason
- Other reason (Please state in the textbox below)

100 characters left

12. On a scale from 1 to 5, where 1 means not interested at all and 5 means very interested, how would you rate your interest in health issues? (Click on the ONE box that you think reflects your answer best)

Not interested at all 1 2 3 4 5 Very interested

13. (Click on the ONE box that you think reflects your answer best)

Not important at all 1 2 3 4 5 Very important

Please check the correctness of your answers before pressing the "Continue" button!

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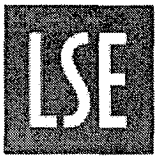

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Step 2. Assignment 3: Communication

You are **in a chat room** online and there is no one you know in there. You would still like to chat to someone. When you click on the continue button below you will be redirected to such a chat room

On this chat web page there are profiles of the people that you can chat to. Please click on the two people that you would be most likely to start chatting to.

Continue

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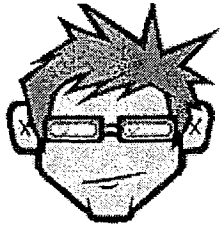
Chatalong

Chat with your friends wherever you are

The following people are online and would like to talk to you. Just click on their picture and we'll give you a space to talk to them.

Hey, I am 17 years old and my name is Raj. I've lived in London my whole life. I spend a lot of time listening to music. Still make time to hang out with my friends and family though. I try to be active and do some sports (football, gym, etc) every week.

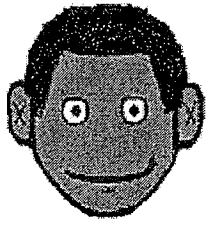
Hey, I am 19 years old and my name is Blue. I've lived in London for as long as I can remember. I love to play video games and to travel. My family is important to me but I guess I spend more time on my own doing my stuff.



Hey, I am 16 years old and my name is Paul. I've lived in London for 10 years. I really like going to concerts and going to the movies with my friends. I play volleyball on a team

Hey, I am 17 years old and my name is Aadi. I've lived in London my whole life. I am reasonably active and I try to spend my spare time with my friends and my family. I also help out older people in

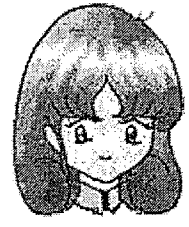
with my brother and we've got a huge fan base (my parents) (:



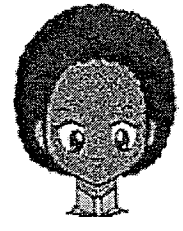
Hey, I am 16 years old and my name is Lemar. I've lived in London for 10 years. In my free time I like going out with friends and playing basketball. I also love listening to music on the radio, I listen to loads of different things which sometimes drives my parents mad (:

Hey, I am 19 years old and my name is Zapper. I've lived in London for ever. I like surfing the internet, riding my bike through London and playing computer games in MUDs

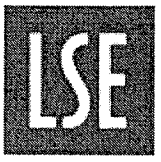
my neighbourhood with things like shopping.



Hey, I am 18 years old and my name is Sarah. I've lived in London for 7 years. Whenever I'm free I like going out with my friends just to chat and have fun. I might spend a bit too much time on the phone (: However, I do try to do some stuff around the house to help my mom out.



Hey, I am 16 years old and my name is Shona. I've lived in London for 8 years. I think I'm a pretty energetic person with lots of different interests. I know the people in my neighbourhood well and love having my friends over to catch up. We often go out after spending some time at our house.



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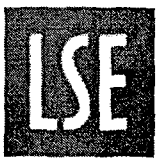
14. Why did you pick the first person to talk to?

- Because they were the first to catch my eye
- Because they seemed similar to me
- Because I liked the way the avatar (the visual depiction) looked
- None of them really interested me, but I had to pick one
- Because they seemed to be someone I could be friends with in the real world
- Because they seemed to be someone I could be friends with on the internet
- Because they seemed like an interesting person
- No particular reason
- Other reason

200 characters left

Please check the correctness of your answers before pressing the "Continue" button!



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Step 3. Questions about internet use

15. How **good** do you think you are at using the internet? (Tick the ONE box that corresponds to your answer).

- ○ Beginner
- ○ Intermediate
- ○ Advanced
- ○ Expert

16.How much **do you agree** with the following statements?

Statements	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
Overuse of the internet may be addictive	○	○	○	○	○
There are unlimited possibilities of the internet that have not been thought of yet	○	○	○	○	○
Use of the internet improves people's standard of living	○	○	○	○	○
The internet is a fast and efficient means of gaining information	○	○	○	○	○

The internet's complexity intimidates me	○	○	○	○	○
Life is easier with the internet	○	○	○	○	○
The internet is frustrating to work with	○	○	○	○	○
It's easier to talk about personal things on the internet	○	○	○	○	○
I feel more confident on the internet than I do in real life	○	○	○	○	○

17. How **often** would you say you use the internet to **look for information**? (Tick the ONE box that corresponds to your answer).

- ○ More than once a day
- ○ About once a day
- ○ A couple of times a week
- ○ About once a week
- ○ A couple of times a month
- ○ Less often

18.How do you mostly **look for information** on the internet?(Tick the AS MANY boxes as apply)

- ☐ Through search engines
- ☐ I use my favourites
- ☐ Just stumble across it
- ☐ I know a few good web addresses by heart
- ☐ Ask others to help me out
- ☐ Other
- ☐ I never look for information on the internet
- ☐ I really don't know

19. How often do you use the internet to communicate with others through an online chat (not through email or instant messaging)?

- A couple of times per day
- Once per day
- A couple of times per week
- Once per week
- A couple of times per month
- Once a month
- Less than once per month

20. Who do you usually chat with on the internet (not through email or instant messaging)?(Tick the AS MANY boxes as apply)

- Friends I know from real life
- Friends I know from the internet
- People I don't know
- Family who live near me
- Family who live further away
- I never chat online
- Other (please describe)

50 characters left

21. On a scale from 1 to 5, how important is it to you that you are a...? (Click on the ONE box that you think reflects your answer best)

	Very unimportant				Very important
Woman/Man	○ 1	○ 2	○ 3	○ 4	○ 5
White/Asian/African Caribbean person	○ 1	○ 2	○ 3	○ 4	○ 5
Young person	○ 1	○ 2	○ 3	○ 4	○ 5

22. In general, how good do you think you are at using the internet, a lot worse, a bit worse, the same, a bit better or a lot better than other people? you are:

○ A lot worse ○ A bit worse ○ The same ○ A bit better ○ A lot better

...at using the internet than other people

23. Are you satisfied with the number of sites that are available for people like you?

○ Very unsatisfied

○ Somewhat unsatisfied

○ Neither satisfied nor unsatisfied

○ Somewhat satisfied

○ Very satisfied

24. Is there anything that you would like to add about (using) the internet?

255 characters left

Please check the correction of your answers before pressing the "Continue" button!

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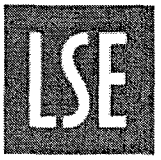

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Research Project about Internet Use

That was all!

Thank you very much for giving your time to participate in this project.

If you decided to participate in the raffle we will let you know by October 1 if you've won the price.

For further information about this project, please contact Ellen Helsper by writing an email to e.j.helsper@lse.ac.uk.

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Appendix IV Means in survey

	Group average		ANOVA		
	Boys	Girls	*df(1,...)*	*F*	*p.*
Home use: General interest	2.69	2.82	674	0.70	0.40
Home use: Infotainment	3.92	2.54	674	120.43	0.00
Home use: Leisure	3.01	3.16	674	1.29	0.26
School use: General interest	0.86	1.03	645	4.12	0.04
School use: Infotainment	2.17	1.30	645	67.44	0.00
School use: Leisure	0.84	0.91	645	0.84	0.36
Future use: Information	0.43	0.44	712	0.40	0.53
Future use: Entertainment	0.80	0.63	712	46.69	0.00
Future use: Male	0.52	0.11	712	340.29	0.00
Attitudes: Internet is a life enhancer	3.66	3.69	706	0.23	0.63
Attitudes: Internet is awe inspiring	3.79	3.93	704	5.61	0.02
Attitudes: Internet is frustrating	2.19	2.41	690	10.24	0.00
Educational resources	3.90	3.74	718	2.62	0.11
Material resources	2.43	2.30	722	3.82	0.05
Home access	0.87	0.80	708	6.38	0.01
Proportion of media use internet	0.17	0.15	692	3.78	0.05
Frequency of current internet use	6.99	6.72	711	7.94	0.00
Frequency of future use	3.59	3.67	628	2.36	0.12
Online confidence: Technical skills	3.61	3.14	698	41.34	0.00
Online confidence: Interaction skills	3.74	3.69	689	0.48	0.49
Online confidence: Comparative self-efficacy	3.12	2.87	701	27.77	0.00
Offline confidence: Individuality	3.97	3.96	684	0.14	0.70
Offline confidence: Pride	3.99	3.96	683	0.17	0.68
Average self-confidence level	28.25	28.14	646	0.08	0.78
Anonymity: Social	3.18	3.14	710	0.55	0.46
Anonymity: Online	1.59	1.68	675	1.26	0.26
Anonymity: Home	0.94	0.85	612	9.68	0.00
Anonymity: School	0.52	0.51	667	0.64	0.42
Time context: Probability of future interaction	4.87	4.38	573	4.22	0.05
Image: Internet is good at engagement	2.02	1.77	709	4.84	0.05
Image: Internet is good for information and services	4.63	4.68	709	0.04	0.84
Image: Internet is good for leisure	4.25	4.23	709	0.50	0.48
Need: Internet is important for information	3.21	3.53	712	19.25	0.00
Need: Internet is important for engagement	2.70	2.84	705	4.41	0.04
Need: Internet is important for leisure	3.43	3.63	714	6.77	0.01
Importance of social identity	3.70	3.77	691	0.00	0.99
Awareness of different group identities	4.06	4.01	686	0.33	0.56
Stereotype: Importance of internet for in-group	3.70	3.78	648	1.11	0.29
Stereotype: Importance of internet for out-group	3.38	3.50	648	2.91	0.09
Stereotype: Women are better at using the internet than men	3.49	3.88	573	19.60	0.00
Stereotype: Young people are more skilled than old people	3.46	3.45	563	1.98	0.16
Stereotype: Ethnic minorities are more skilled than the majority	2.97	3.04	561	0.01	0.91
Stereotype: LGB people are more skilled than non-LGB people	2.89	3.17	569	16.70	0.00

	Group average			ANOVA		
	AC	AS	White	*df(2,...)*	*F*	*p.*
Home use: General interest	2.42	3.06	2.89	470	4.26	0.01
Home use: Infotainment	3.00	3.66	3.33	470	5.91	0.00
Home use: Leisure	2.73	3.36	3.21	470	6.65	0.00
School use: General interest	1.10	0.94	0.86	449	1.96	0.14
School use: Infotainment	1.88	1.71	1.64	449	1.09	0.34
School use: Leisure	1.02	0.75	0.78	449	4.09	0.02
Future use: Information	0.41	0.44	0.44	492	0.77	0.46
Future use: Entertainment	0.71	0.75	0.74	492	0.75	0.47
Future use: Male	0.31	0.35	0.35	492	0.54	0.58
Attitudes: Internet is a life enhancer	3.59	3.76	3.72	494	2.74	0.07
Attitudes: Internet is awe inspiring	3.86	3.96	3.79	493	2.18	0.11
Attitudes: Internet is frustrating	2.33	2.21	2.20	485	1.04	0.36
Educational resources	3.48	3.62	4.17	490	14.01	0.00
Material resources	2.18	2.57	2.40	492	8.36	0.00
Home access	0.81	0.91	0.85	486	2.79	0.06
Proportion of media use internet	0.15	0.18	0.17	477	3.52	0.03
Frequency of current internet use	6.70	7.06	7.00	488	4.17	0.02
Frequency of future use	3.94	3.67	3.59	442	4.97	0.01
Online confidence: Technical skills	3.20	3.54	3.39	489	5.23	0.01
Online confidence: Interaction skills	3.63	3.81	3.73	485	1.62	0.20
Online confidence: Comparative self-efficacy	3.03	3.05	2.95	493	1.06	0.35
Offline confidence: Individuality	4.07	3.88	4.03	488	3.42	0.03
Offline confidence: Pride	4.05	3.93	4.08	488	1.91	0.15
Average self-confidence level	28.62	27.84	28.96	457	2.39	0.09
Anonymity: Social	3.27	3.16	3.13	493	1.67	0.19
Anonymity: Online	1.46	1.58	1.66	481	1.23	0.29
Anonymity: Home	0.84	0.90	0.94	435	3.93	0.02
Anonymity: School	0.56	0.48	0.51	466	1.16	0.31
Time context: Probability of future interaction	4.57	5.07	4.58	402	0.84	0.43
Image: Internet is good at engagement	1.85	1.95	1.88	491	0.14	0.87
Image: Internet is good for information and services	4.21	5.00	4.79	491	4.81	0.01
Image: Internet is good for leisure	3.95	4.50	4.21	491	5.27	0.01
Need: Internet is important for information	3.42	3.45	3.22	491	3.45	0.03
Need: Internet is important for engagement	2.84	2.86	2.57	487	4.92	0.01
Need: Internet is important for leisure	3.50	3.68	3.45	493	3.07	0.05
Importance of social identity	3.95	3.85	3.41	489	15.61	0.00
Awareness of different group identities	4.17	4.19	3.80	485	10.61	0.00
Stereotype: Importance of internet for in-group	3.78	3.75	3.74	462	0.08	0.93
Stereotype: Importance of internet for out-group	3.39	3.51	3.43	463	0.69	0.50
Stereotype: Women are better at using the internet than men	3.81	3.68	3.92	414	1.69	0.19
Stereotype: Young people are better at using the internet than old people	3.48	3.46	3.26	416	1.66	0.19
Stereotype: Ethnic minorities are better at using the internet than the majority	3.04	3.06	2.98	409	0.62	0.54
Stereotype: LGB people are better at using the internet than non-LGB people	2.95	2.99	3.01	409	0.25	0.78

	Group averages		ANOVA		
	Disabled	Non-Disabled	*df(1,...)*	*F*	*p.*
Home use: General interest	2.60	2.74	616	0.18	0.67
Home use: Infotainment	2.79	3.25	616	2.60	0.11
Home use: Leisure	2.57	3.13	616	4.62	0.03
School use: General interest	0.70	0.96	593	2.32	0.13
School use: Infotainment	1.78	1.73	593	0.04	0.83
School use: Leisure	0.78	0.85	593	0.25	0.62
Future use: Information	0.44	0.43	655	0.11	0.74
Future use: Entertainment	0.69	0.72	655	0.31	0.58
Future use: Male	0.42	0.30	655	3.99	0.05
Attitudes: Internet is a life enhancer	3.51	3.67	656	1.92	0.17
Attitudes: Internet is awe inspiring	3.48	3.88	655	10.39	0.00
Attitudes: Internet is frustrating	2.57	2.27	647	4.27	0.04
Educational resources	4.01	3.84	652	0.71	0.40
Material resources	2.41	2.36	656	0.14	0.70
Home access	0.70	0.84	647	5.22	0.02
Proportion of media use internet	0.11	0.16	637	9.05	0.00
Frequency of current internet use	6.35	6.86	650	6.25	0.01
Frequency of future use	3.55	3.71	593	0.99	0.32
Online confidence: Technical skills	3.08	3.41	652	4.70	0.03
Online confidence: Interaction skills	3.35	3.75	648	7.76	0.01
Online confidence: Comparative self-efficacy	2.64	3.02	656	14.17	0.00
Offline confidence: Individuality	3.50	4.01	651	14.07	0.00
Offline confidence: Pride	3.42	4.04	651	25.66	0.00
Average self-confidence level	24.63	28.53	620	24.04	0.00
Anonymity: Social	3.21	3.15	656	0.24	0.63
Anonymity: Online	1.46	1.65	639	1.12	0.29
Anonymity: Home	0.92	0.90	568	0.15	0.70
Anonymity: School	0.39	0.51	619	3.85	0.05
Time context: Probability of future interaction	3.49	4.67	539	5.86	0.06
Image: Internet is good at engagement	1.61	1.94	652	0.06	0.81
Image: Internet is good for information and services	4.02	4.79	652	2.24	0.04
Image: Internet is good for leisure	3.87	4.79	652	1.82	0.18
Need: Internet is important for information	3.09	3.36	657	1.78	0.04
Need: Internet is important for engagement	2.85	2.74	649	2.84	0.09
Need: Internet is important for leisure	3.31	3.56	657	0.83	0.36
Importance of social identity	3.57	3.75	659	1.65	0.20
Awareness of different group identities	3.80	4.06	656	3.66	0.06
Stereotype: Importance of internet for in-group	3.65	3.75	624	0.45	0.50
Stereotype: Importance of internet for out-group	3.60	3.44	624	1.27	0.26
Stereotype: Women are better at using the internet than men	4.01	3.68	555	2.24	0.13
Stereotype: Young people are better at using the internet than old people	3.20	3.46	557	1.47	0.23
Stereotype: Ethnic minorities are better at using the internet than the majority	3.02	3.01	548	0.01	0.94
Stereotype: LGB people are better at using the internet than non-LGB people	3.30	3.02	546	4.33	0.04

	Group averages		ANOVA		
	LGB	Non-LGB	*df(1,...)*	*F*	*p.*
Home use: General interest	3.05	2.71	616	1.56	0.21
Home use: Infotainment	3.26	3.22	616	0.02	0.88
Home use: Leisure	3.27	3.08	616	0.71	0.40
School use: General interest	1.09	0.91	596	1.66	0.20
School use: Infotainment	1.44	1.75	596	2.53	0.11
School use: Leisure	1.07	0.84	596	3.24	0.07
Future use: Information	0.47	0.42	654	3.67	0.06
Future use: Entertainment	0.60	0.73	654	9.65	0.00
Future use: Male	0.29	0.31	654	0.17	0.68
Attitudes: Internet is a life enhancer	3.62	3.69	655	0.47	0.49
Attitudes: Internet is awe inspiring	3.86	3.87	655	0.02	0.90
Attitudes: Internet is frustrating	2.49	2.28	648	2.97	0.09
Educational resources	3.91	3.86	650	0.10	0.75
Material resources	2.34	2.37	655	0.11	0.74
Home access	0.87	0.83	646	0.68	0.41
Proportion of media use internet	0.17	0.16	638	0.53	0.46
Frequency of current internet use	6.69	6.84	650	0.83	0.36
Frequency of future use	3.49	3.73	591	2.93	0.09
Online confidence: Technical skills	3.40	3.39	650	0.01	0.94
Online confidence: Interaction skills	3.85	3.71	647	1.47	0.23
Online confidence: Comparative self-efficacy	2.99	3.00	655	0.00	0.95
Offline confidence: Individuality	392	4.01	648	1.32	0.25
Offline confidence: Pride	3.71	4.03	648	10.04	0.00
Average self-confidence level	27.04	28.49	620	4.74	0.03
Anonymity: Social	3.18	3.17	656	0.00	0.96
Anonymity: Online	1.72	1.62	642	0.47	0.49
Anonymity: Home	0.89	0.91	567	0.11	0.74
Anonymity: School	0.62	0.49	621	3.34	0.07
Time context: Probability of future interaction	3.85	4.64	543	3.50	0.06
Image: Internet is good at engagement	2.09	1.87	655	1.73	0.19
Image: Internet is good for information and services	4.46	4.73	655	0.74	0.39
Image: Internet is good for leisure	4.15	4.28	655	0.20	0.66
Need: Internet is important for information	3.52	3.36	654	1.77	0.18
Need: Internet is important for engagement	3.12	2.70	648	15.71	0.00
Need: Internet is important for leisure	3.67	3.54	656	1.93	0.17
Importance of social identity	3.47	3.76	656	8.12	0.00
Awareness of different group identities	3.86	4.07	652	3.80	0.05
Stereotype: Importance of internet for in-group	3.69	3.75	619	0.22	0.64
Stereotype: Importance of internet for out-group	3.78	3.41	617	9.84	0.00
Stereotype: Women are better at using the internet than men	3.86	3.68	549	1.14	0.29
Stereotype:: Young people are better at using the internet than old people	3.45	3.46	554	0.01	0.93
Stereotype: Ethnic minorities are better at using the internet than the majority	3.17	2.99	544	3.61	0.06
Stereotype: LGB people are better at using the internet than non-LGB people	3.20	3.00	542	3.78	0.05

Appendix V Correlations in survey

1 = Home use: General interest
2 = Home use: Infotainment
3 = Home use: Leisure
4 = School use: General interest
5 = School use: Infotainment
6 = School use: Leisure
7 = Future use: Information
8 = Future use: Entertainment
9 = Future use: Male
10 = Attitudes: Internet is a life enhancer
11 = Attitudes: Internet is awe inspiring
12 = Attitudes: Internet is frustrating
13 = Educational resources
14 = Material resources
15 = Home access
16 = Proportion of media use internet
17 = Frequency of current internet use
18 = Frequency of future use
19 = Online confidence: Technical skills
20 = Online confidence: Interaction skills
21 = Online confidence: Comparative self-efficacy
22 = Offline confidence: Individuality
23 = Offline confidence: Pride
24 = Average self-confidence level
25 = Anonymity: Social
26 = Anonymity: Online
27 = Anonymity: Home
28 = Anonymity: School
29 = Time context: Probability of future interaction
30 = Image: Internet is good at engagement
31 = Image: Internet is good for information and services
32 = Image: Internet is good for entertainment
33 = Need: Internet is important for information
34 = Need: Internet is important for engagement
35 = Need: Internet is important for pastime and entertainment
36 = Importance of social identity
37 = Awareness of different group identities
38 = Stereotype: Importance of internet for in-group
39 = Stereotype: Importance of internet for out-group
40 = Stereotype: Young people are better at using the internet than old people
41 = Stereotype: Ethnic minorities are better at using the internet than the majority
42 = Stereotype: LGB people are better at using the internet than non-LGB people
43 = Stereotype: Women are better at using the internet than men

	1		2		3		4		5		6		7		8		9		10		11	
1	1.00																					
2	0.59	**	1.00																			
3	0.76	**	0.66	**	1.00																	
4	0.22	**	0.03		0.08		1.00															
5	0.10	**	0.18	**	0.07		0.28	**	1.00													
6	0.05		-0.05		0.03		0.49	**	0.35	**	1.00											
7	0.48	**	0.30	**	0.35	**	0.21	**	0.25	**	0.13	**	1.00									
8	0.10	*	0.32	**	0.11	**	-0.02		0.27	**	0.11	**	0.14	**	1.00							
9	0.11	**	0.49	**	0.11	**	0.00		0.31	**	-0.01		0.22	**	0.32	**	1.00					
10	0.12	**	0.18	**	0.14	**	0.06		0.09	*	0.08		0.18	**	0.20	**	0.09	*	1.00			
11	0.20	**	0.18	**	0.20	**	0.06		0.10	*	0.11	**	0.18	**	0.11	**	0.03		0.38	**	1.00	
12	-0.02		-0.13	**	-0.03		0.09	*	-0.03		0.12	**	0.05		-0.12	**	-0.06		-0.10	*	-0.06	
13	0.20	**	0.20	**	0.20	**	0.02		0.07		0.01		0.15	**	0.01		0.04		0.01		0.11	**
14	0.18	**	0.17	**	0.15	**	0.04		-0.02		-0.05		0.07		0.08	*	0.10	**	0.03		-0.01	
15	0.38	**	0.48	**	0.52	**	-0.07		-0.09	*	-0.14	**	0.07		0.08	*	0.13	**	0.07		0.08	*
16	0.23	**	0.30	**	0.22	**	0.01		-0.01		-0.05		0.14	**	0.14	**	0.11	**	0.14	**	0.16	**
17	0.21	**	0.31	**	0.17	**	0.06		0.12	**	0.05		0.18	**	0.26	**	0.16	**	0.20	**	0.16	**
18	0.00		-0.11	**	-0.09	*	0.04		0.01		0.08		-0.03		0.01		-0.13	**	0.09	*	0.06	
19	0.16	**	0.29	**	0.21	**	-0.09	*	0.07		-0.11	**	0.08	*	0.23	**	0.17	**	0.26	**	0.23	**
20	0.14	**	0.13	**	0.14	**	-0.04		0.03		-0.05		0.09	*	0.23	**	0.04		0.22	**	0.31	**
21	0.11	**	0.24	**	0.15	**	0.06		0.09	*	0.08	*	0.05		0.17	**	0.13	**	0.15	**	0.14	**
22	0.04		0.10	*	0.08	*	0.04		0.06		0.00		0.06		0.08	*	0.06		0.15	**	0.25	**
23	0.04		0.12	**	0.11	**	0.02		0.09	*	-0.01		0.01		0.10	**	0.05		0.16	**	0.21	**
24	0.02		0.10	*	0.07		0.04		0.06		0.01		0.02		0.09	*	0.07		0.14	**	0.19	**
25	-0.15	**	-0.15	**	-0.17	**	-0.02		-0.06		0.03		-0.18	**	-0.05		-0.07		-0.14	**	-0.02	
26	0.06		0.07		0.07		0.10	*	0.00		0.06		0.07		0.12	**	0.10	*	0.00		0.07	
27	0.03		0.09	*	0.06		-0.07		0.01		-0.06		0.03		0.08	*	0.08	*	0.01		0.10	*
28	0.03		-0.02		0.04		-0.02		-0.13	**	-0.03		-0.04		-0.09	*	-0.08	*	-0.09	*	0.02	
29	0.19	**	0.21	**	0.16	**	-0.02		-0.01		-0.04		0.07		0.08		0.07		0.13	**	0.14	**

** Correlation significant at p<.01

* Correlation significant at p<.05

	1		2		3		4		5		6		7		8		9		10		11	
30	0.16	**	0.09	*	0.11	**	0.11	**	0.10	*	0.15	**	0.33	**	0.14	**	0.17	**	0.10	**	0.18	**
31	0.22	**	0.14	**	0.19	**	0.12	**	0.13	**	0.11	**	0.40	**	0.16	**	0.15	**	0.10	**	0.19	**
32	0.19	**	0.18	**	0.19	**	0.07		0.17	**	0.15	**	0.37	**	0.22	**	0.12	**	0.20	**	0.28	**
33	0.13	**	-0.03		0.06		0.17	**	0.00		0.06		0.22	**	0.08	*	-0.05		0.26	**	0.30	**
34	0.11	**	0.00		0.03		0.17	**	-0.03		0.09	*	0.15	**	0.07		-0.04		0.27	**	0.20	**
35	0.11	**	0.04		0.09	*	0.07		-0.01		0.02		0.17	**	0.15	**	-0.02		0.30	**	0.32	**
36	0.00		0.08		-0.01		0.02		0.08		0.01		0.04		0.09	*	0.10	*	0.12	**	0.13	**
37	0.03		0.08	*	0.04		-0.01		0.04		-0.03		0.01		0.07		0.09	*	0.06		0.15	**
38	0.03		0.02		0.03		-0.03		0.15	**	0.03		0.10	**	0.10	*	0.07		0.28	**	0.23	**
39	-0.02		-0.04		0.00		-0.03		0.04		0.03		0.09	*	0.00		0.03		0.21	**	0.14	**
40	0.00		0.03		0.05		-0.02		0.04		0.10	*	-0.13	**	0.05		0.03		0.04		0.10	*
41	0.00		-0.02		0.02		0.02		-0.04		-0.03		-0.04		-0.03		0.00		0.00		0.08	
42	-0.03		-0.12	**	-0.05		0.03		-0.03		0.00		-0.07		-0.08		-0.19	**	-0.01		-0.03	
43	0.03		-0.04		0.01		0.03		-0.01		-0.01		0.06		-0.05		-0.04		0.12	**	0.14	**

** Correlation significant at p<.01

* Correlation significant at p<.05

	12		13		14		15		16		17		18		19		20		21		22	
13	-0.09	*	1.00																			
14	-0.03		0.16	**	1.00																	
15	-0.14	**	0.07		0.17	**	1.00															
16	-0.19	**	-0.04		0.05		0.30	**	1.00													
17	-0.20	**	0.07		0.05		0.18	**	0.51	**	1.00											
18	0.02		-0.14	**	-0.07		-0.11	**	-0.07		-0.07		1.00									
19	-0.24	**	0.06		0.06		0.19	**	0.24	**	0.19	**	-0.07		1.00							
20	-0.16	**	0.02		0.03		0.16	**	0.20	**	0.22	**	-0.01		0.66	**	1.00					
21	-0.27	**	0.06		0.03		0.13	**	0.29	**	0.30	**	0.03		0.33	**	0.21	**	1.00			
22	-0.18	**	0.10	**	0.07		-0.01		0.01		0.05		0.09	*	0.18	**	0.25	**	0.13	**	1.00	
23	-0.21	**	0.08	*	0.05		0.00		0.00		0.05		0.11	**	0.19	**	0.25	**	0.08	*	0.87	**
24	-0.21	**	0.08	*	0.03		0.01		0.00		0.05		0.11	*	0.16	**	0.24	**	0.06		0.90	**
25	0.00		-0.09	*	-0.08	*	-0.13	**	-0.19	**	-0.14	**	0.11	**	-0.13	**	-0.07		-0.07		-0.08	*
26	0.00		0.01		0.07		0.04		0.08	*	0.04		-0.07		0.00		0.05		0.04		0.10	**
27	-0.11	**	0.10	*	0.01		0.10	*	0.05		0.12	**	-0.06		0.06		0.10	*	0.02		0.02	
28	0.02		-0.02		-0.03		0.00		-0.08		-0.01		0.03		0.00		-0.01		-0.01		0.02	
29	-0.16	**	-0.10	*	0.02		0.19	**	0.87	**	0.50	**	0.34	**	0.21	**	0.18	**	0.29	**	0.02	
30	-0.04		0.08	*	-0.02		0.04		0.07		0.11	**	-0.02		0.15	**	0.15	**	0.09	*	0.11	**
31	-0.05		0.10	**	0.02		0.03		0.03		0.13	**	0.02		0.18	**	0.15	**	0.05		0.10	**
32	-0.11	**	0.12	**	0.00		0.04		0.12	**	0.21	**	-0.03		0.19	**	0.20	**	0.15	**	0.14	**
33	0.05		-0.02		-0.01		-0.02		0.06		0.08	*	0.12	**	0.19	**	0.20	**	0.01		0.13	**
34	0.10	*	-0.10	*	-0.03		0.06		0.18	**	0.14	**	0.02		0.14	**	0.24	**	0.01		-0.03	
35	-0.03		-0.01		-0.05		0.01		0.13	**	0.14	**	0.04		0.28	**	0.26	**	0.10	**	0.10	*
36	-0.03		-0.09	*	0.03		-0.03		0.04		0.05		0.13	**	0.08	*	0.14	**	0.08	*	0.20	**
37	-0.10	**	-0.05		-0.01		-0.02		0.04		0.04		0.04		0.17	**	0.22	**	0.18	**	0.29	**
38	-0.05		0.00		-0.07		-0.02		0.03		0.11	**	0.01		0.20	**	0.23	**	-0.02		0.17	**
39	0.02		0.02		-0.05		-0.11	**	-0.06		0.02		-0.02		0.19	**	0.19	**	-0.02		0.16	**
40	0.05		-0.06		-0.09	*	-0.04		0.06		0.06		0.03		0.05		0.07		-0.01		0.09	*
41	0.03		-0.11	**	-0.02		0.02		-0.01		-0.03		-0.03		0.07		0.12	**	0.05		0.05	
42	0.06		-0.06		-0.08		-0.03		-0.04		-0.03		0.02		0.03		0.01		-0.10	*	-0.03	
43	-0.10	*	0.01		0.05		-0.03		0.00		0.07		-0.08		0.03		0.04		0.05		0.06	

** Correlation significant at p<.01. * Correlation significant at p<.05.

	23		24		25		26		27		28		29		30		31		32		33	
23	1.00																					
24	0.99	**	1.00																			
25	-0.09	*	-0.08	*	1.00																	
26	0.06		0.06		-0.04		1.00															
27	0.01		0.01		0.11	**	-0.04		1.00													
28	0.00		0.00		0.09	*	0.04		0.10	*	1.00											
29	0.01		0.00		-0.14	**	0.00		0.08		-0.02		1.00									
30	0.05		0.06		-0.05		0.06		0.10	*	0.00		0.06		1.00							
31	0.08	*	0.07		-0.11	**	0.02		0.10	*	0.01		0.04		0.78	**	1.00					
32	0.12	**	0.11	**	-0.13	**	0.07		0.14	**	0.00		0.11	*	0.68	**	0.77	**	1.00			
33	0.12	**	0.12	**	-0.14	**	0.00		-0.07		0.06		0.02		0.09	*	0.18	**	0.13	**	1.00	
34	-0.06		-0.04		-0.23	**	-0.01		-0.11	**	-0.02		0.11	**	0.16	**	0.10	**	0.12	**	0.62	**
35	0.09	*	0.08		-0.14	**	0.03		-0.02		0.03		0.05		0.06		0.12	**	0.17	**	0.82	**
36	0.17	**	0.17	**	-0.11	**	0.05		-0.11	**	-0.08	*	0.08		-0.03		-0.01		-0.05		0.10	**
37	0.23	**	0.24	**	-0.02		0.04		-0.05		0.02		0.06		-0.02		0.00		0.03		0.11	**
38	0.17	**	0.21	**	-0.05		0.00		-0.01		0.00		0.04		0.09	*	0.11	**	0.12	**	0.26	**
39	0.15	**	0.15	**	-0.04		0.00		0.00		-0.04		-0.05		0.16	**	0.16	**	0.14	**	0.23	**
40	0.08	*	0.10	*	0.06		0.01		-0.04		0.04		0.06		0.04		0.03		0.03		0.08	
41	0.02		-0.01		-0.02		0.07		-0.08		-0.03		-0.07		-0.04		-0.03		-0.06		0.17	**
42	-0.04		-0.03		-0.04		-0.02		0.04		-0.03		-0.08		-0.03		-0.03		-0.09	*	0.07	
43	0.06		0.07		-0.02		0.03		-0.02		-0.06		-0.08		-0.02		0.02		0.04		0.12	**

** Correlation significant at p<.01

* Correlation significant at p<.05

	34		35		36		37		38		39		40		41		42	
34	1.00																	
35	0.53	**	1.00															
36	0.12	**	0.08	*	1.00													
37	0.12	**	0.07		0.52	**	1.00											
38	0.18	**	0.28	**	0.19	**	0.17	**	1.00									
39	0.18	**	0.22	**	0.13	**	0.12	**	0.68	**	1.00							
40	0.08	*	0.02		0.15	**	0.15	**	0.13	**	0.14	**	1.00					
41	0.18	**	0.15	**	0.03		0.13	**	0.12	**	0.20	**	0.13	**	1.00			
42	0.03		0.05		-0.03		-0.04		0.09	*	0.10	*	0.13	**	0.29	**	1.00	
43	0.00		0.19	**	-0.09	*	-0.08	*	0.21	**	0.13	**	-0.21	**	0.16	**	0.13	**

** Correlation significant at p<.01

* Correlation significant at p<.05

Appendix VI Coefficients in macro model path analyses

			Quantity of use							
			Internet status comparison[108]				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Gender	>	Material resources								
Gender	>	Educational resources					-0.07	0.03	*	-0.11
Gender	>	Home access								
Gender	>	Confidence	-0.86	0.17	**	-0.21	-1.15	0.18	**	-0.28
Ethnicity	>	Material resources	-0.37	0.09	**	-0.16	-0.62	0.12	**	-0.23
Ethnicity	>	Educational resources	-0.30	0.14	*	-0.09				
Ethnicity	>	Home access								
Ethnicity	>	Confidence								
Educational resources	>	Home access								
Educational resources	>	Confidence								
Material resources	>	Home access	0.06	0.02	**	0.15	0.05	0.02	**	0.15
Material resources	>	Confidence								
Home access	>	Confidence	1.19	0.26	**	0.19	0.95	0.30	**	0.14
		Internet uses								
Gender	>	Proportion								
Gender	>	Frequency	-0.23	0.09	*	-0.10	-0.21	0.09	*	-0.10
Ethnicity	>	Proportion								
Ethnicity	>	Frequency								
Resources 1	>	Proportion								
Resources 1	>	Frequency								
Resources 2	>	Proportion	-0.01	0.00	**	-0.13	-0.01	0.00	**	-0.15
Resources 2	>	Frequency								
Home access	>	Proportion	0.08	0.01	**	0.22	0.09	0.02	**	0.23
Home access	>	Frequency	0.50	0.15	**	0.14	0.61	0.15	**	0.18
Confidence	>	Proportion	0.02	0.00	**	0.29	0.02	0.00	**	0.32
Confidence	>	Frequency	0.14	0.02	**	0.25	0.14	0.02	**	0.27
	Covariances									
Ethnicity	<>	Gender	0.03	0.01	**		0.03	0.01	**	
Resources 2	<>	Resources 1	0.16	0.05	**		0.19	0.05	**	
Proportion on internet	<>	Frequency of use	0.05	0.01	**		0.04	0.01	**	

Note. Resources 1 = Material

Resources 2 = Educational

[108] Ethnicity in the internet status comparison is African Caribbean (in comparison to teenagers of other ethnicities), and Ethnicity in the social status comparison is Asian (in comparison to White teenagers).

			Home use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Gender	>	Resources 1								
Gender	>	Resources 2								
Gender	>	Home access								
Gender	>	Confidence	-0.90	0.17	**	-0.23	-1.12	0.19	**	-0.28
Ethnicity	>	Resources 1	-0.36	0.10	**	-0.16				
Ethnicity	>	Resources 2					-0.68	0.13	**	-0.25
Ethnicity	>	Home access								
Ethnicity	>	Confidence								
Resources 2	>	Home access								
Resources 2	>	Confidence								
Resources 1	>	Home access								
Resources 1	>	Confidence								
Home access	>	Confidence								
		Internet uses								
Confidence	>	Infotainment	0.13	0.03	**	0.17	0.12	0.03	**	0.16
Confidence	>	Leisure	0.11	0.03	**	0.16	0.11	0.03	**	0.16
Confidence	>	General interest	0.19	0.04	**	0.20	0.19	0.05	**	0.20
Ethnicity	>	Infotainment								
Ethnicity	>	Leisure								
Ethnicity	>	General interest								
Gender	>	Infotainment	-1.26	0.12	**	-0.42	-1.29	0.13	**	-0.43
Gender	>	Leisure	0.43	0.12	**	0.16	0.44	0.13	**	0.16
Gender	>	General interest	0.56	0.17	**	0.15	0.53	0.19	*	0.14
Resources 1	>	Infotainment								
Resources 1	>	Leisure								
Resources 1	>	General interest	0.19	0.07	*	0.09	0.17	0.08	*	0.08
Resources 2	>	Infotainment	0.17	0.05	**	0.15	0.14	0.05	**	0.12
Resources 2	>	Leisure	0.21	0.05	**	0.20	0.19	0.05	**	0.19
Resources 2	>	General interest	0.22	0.06	**	0.15	0.18	0.07	*	0.13
Home access	>	Infotainment								
Home access	>	Leisure								
Home access	>	General interest								
Covariances										
Ethnicity	<>	Gender	0.03	0.01	**		0.04	0.01	**	
Resources 2	<>	Resources 1	0.16	0.05	**		0.20	0.06	**	
General interest	<>	Leisure	0.93	0.09	**		0.90	0.09	**	
Leisure	<>	Infotainment	1.53	0.13	**		1.52	0.14	**	
General interest	<>	Infotainment	1.09	0.12	**		1.02	0.12	**	

Note. Resources 1 = Material

Resources 2 = Educational

			School use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Gender	>	Resources 1								
Gender	>	Resources 2								
Gender	>	Home access								
Gender	>	Confidence	-0.87	0.17	**	-0.21	-1.16	0.18	**	-0.28
Ethnicity	>	Resources 1	-0.37	0.09	**	-0.16				
Ethnicity	>	Resources 2	-0.30	0.14	*	-0.09	-0.62	0.12	**	-0.23
Ethnicity	>	Home access								
Ethnicity	>	Confidence								
Resources 2	>	Home access								
Resources 2	>	Confidence								
Resources 1	>	Home access	0.05	0.02	**	0.15	0.05	0.02	**	0.15
Resources 1	>	Confidence								
Home access	>	Confidence	1.19	0.26	**	0.18	0.97	0.29	**	0.15
		Internet uses								
Confidence	>	Infotainment								
Confidence	>	Leisure								
Confidence	>	General interest								
Ethnicity	>	Infotainment								
Ethnicity	>	Leisure	0.18	0.08	*	0.08				
Ethnicity	>	General interest								
Gender	>	Infotainment	-0.82	0.11	**	-0.29	-0.89	0.12	**	-0.32
Gender	>	Leisure								
Gender	>	General interest	0.18	0.08	*	0.08				
Resources 1	>	Infotainment								
Resources 1	>	Leisure								
Resources 1	>	General interest								
Resources 2	>	Infotainment								
Resources 2	>	Leisure								
Resources 2	>	General interest								
Home access	>	Infotainment								
Home access	>	Leisure								
Home access	>	General interest								
Covariances										
Ethnicity	<>	Gender	0.03	0.01	**		0.03	0.01	**	
Resources 2	<>	Resources 1	0.16	0.05	**		0.19	0.05	**	
General interest	<>	Leisure	0.49	0.06	**		0.45	0.06	**	
Leisure	<>	Infotainment	0.47	0.05	**		0.47	0.05	**	
General interest	<>	Infotainment	0.49	0.07	**		0.48	0.07	**	

Note. Resources 1 = Material

Resources 2 = Educational

			Future use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Gender	>	Resources 1								
Gender	>	Resources 2								
Gender	>	Home access					-0.07	0.03	*	-0.11
Gender	>	Confidence	-0.85	0.17	**	-0.21	-1.14	0.18	**	-0.28
Ethnicity	>	Resources 1	-0.37	0.09	**	-0.16				
Ethnicity	>	Resources 2	-0.30	0.14	*	-0.09	-0.62	0.12	**	-0.23
Ethnicity	>	Home access								
Ethnicity	>	Confidence								
Resources 2	>	Home access								
Resources 2	>	Confidence								
Resources 1	>	Home access	0.05	0.02	**	0.15	0.05	0.02	**	0.14
Resources 1	>	Confidence								
Home access	>	Confidence	1.22	0.26	**	0.19	0.98	0.30	**	0.15
		Internet uses								
Confidence	>	Information					0.02	0.01	**	0.15
Confidence	>	Entertainment	0.02	0.01	**	0.15	0.02	0.01	**	0.14
Confidence	>	Male								
Ethnicity	>	Information								
Ethnicity	>	Entertainment								
Ethnicity	>	Male								
Gender	>	Information								
Gender	>	Entertainment	-0.19	0.03	**	-0.28	-0.20	0.03	**	-0.31
Gender	>	Male	-0.43	0.02	**	-0.59	-0.42	0.03	**	-0.58
Resources 1	>	Information								
Resources 1	>	Entertainment					0.03	0.02	*	0.09
Resources 1	>	Male								
Resources 2	>	Information	0.02	0.01	**	0.13	0.02	0.01	*	0.11
Resources 2	>	Entertainment								
Resources 2	>	Male								
Home access	>	Information	0.09	0.03	**	0.14	0.14	0.03	**	0.20
Home access	>	Entertainment					0.09	0.05	*	0.09
Home access	>	Male					0.12	0.05	*	0.10
Covariances										
Ethnicity	<>	Gender	0.03	0.01	**		0.03	0.01	**	
Resources 2	<>	Resources 1	0.16	0.05	**		0.19	0.05	**	
Male	<>	Entertainment	0.01	0.00	*					
Entertainment	<>	Information	0.02	0.00	**		0.02	0.00	**	
Male	<>	Information	0.02	0.00	**		0.02	0.00	**	

Note. Resources 1 = Material

Resources 2 = Educational

Appendix VII Coefficients in micro model path analyses

			Home use							
			Outcome variable use				Outcome variable attitudes			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Confidence	>	Need 1								
Confidence	>	Need 2	0.03	0.01	**	0.10	0.03	0.01	**	0.10
Confidence	>	Need 3								
Confidence	>	Attitudes	0.44	0.06	**	0.30	0.40	0.07	**	0.26
Image 1	>	Need 1	0.09	0.01	**	0.23	0.09	0.01	**	0.23
Image 2	>	Need 2	0.12	0.02	**	0.20	0.12	0.02	**	0.20
Image 3	>	Need 3	0.13	0.02	**	0.24	0.13	0.02	**	0.24
Need 1	>	Attitudes	-0.75	0.31	*	-0.16	-0.74	0.31	*	-0.16
Need 2	>	Attitudes	1.54	0.33	**	0.32	1.53	0.33	**	0.31
Need 3	>	Attitudes								
Anonymity 1	>	Confidence								
Anonymity 1	>	Image 1								
Anonymity 1	>	Image 2								
Anonymity 1	>	Image 3								
Anonymity 1	>	Attitudes	1.21	0.61	*	0.08				
Anonymity 2	>	Confidence								
Anonymity 2	>	Image 1								
Anonymity 2	>	Image 2								
Anonymity 2	>	Image 3								
Anonymity 2	>	Attitudes								
Anonymity 3	>	Confidence								
Anonymity 3	>	Image 1								
Anonymity 3	>	Image 2	0.10	0.04	*	0.07	0.10	0.04	*	0.07
Anonymity 3	>	Image 3								
Anonymity 3	>	Attitudes								
Anonymity 4	>	Confidence	-0.43	0.16	*	-0.11	-0.43	0.16	*	-0.11
Anonymity 4	>	Image 1								
Anonymity 4	>	Image 2								
Anonymity 4	>	Image 3								
Anonymity 4	>	Attitudes								
Time context	>	Confidence	0.12	0.04	**	0.16	0.12	0.04	**	0.16
Time context	>	Image 1								
Time context	>	Image 2	0.04	0.01	**	0.10	0.04	0.01	**	0.10
Time context	>	Image 3	0.04	0.02	*	0.09	0.04	0.02	*	0.09
Time context	>	Attitudes								
		Internet uses								
Time context	>	General Interest	0.05	0.02	*	0.09	0.05	0.02	**	0.10
Confidence	>	General Interest	0.11	0.03	**	0.16	0.11	0.03	**	0.16
Need 1	>	General Interest	0.81	0.12	**	0.38	0.81	0.12	**	0.38
Need 2	>	General Interest	-0.41	0.12	**	-0.18	-0.42	0.12	**	-0.19
Need 3	>	General Interest								
Anonymity 1	>	General Interest								
Anonymity 2	>	General Interest								
Anonymity 3	>	General Interest								
Anonymity 4	>	General Interest								
Attitudes	>	General Interest					0.34	0.12	**	0.12
Time context	>	Infotainment					0.04	0.02	*	0.09
Confidence	>	Infotainment	0.13	0.03	**	0.25	0.14	0.02	**	0.26
Need 1	>	Infotainment								
Need 2	>	Infotainment								

			Home use							
			Outcome variable use				Outcome variable attitudes			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Anonymity 1	>	Infotainment								
Anonymity 2	>	Infotainment								
Anonymity 3	>	Infotainment								
Anonymity 4	>	Infotainment								
Attitudes	>	Infotainment	0.04	0.02	*	0.10				
Time context	>	Leisure								
Confidence	>	Leisure	0.09	0.02	**	0.18	0.09	0.02	**	0.19
Need 1	>	Leisure	0.31	0.07	**	0.20	0.30	0.07	**	0.20
Need 2	>	Leisure								
Need 3	>	Leisure	-0.13	0.06	*	-0.09	-0.12	0.06	*	-0.09
Anonymity 1	>	Leisure								
Anonymity 2	>	Leisure								
Anonymity 3	>	Leisure								
Anonymity 4	>	Leisure								
Attitudes	>	Leisure								
Covariances										
Need 1	<>	Need 2	0.49	0.04	**		0.49	0.04	**	
Need 2	<>	Need 3	0.39	0.04	**		0.39	0.04	**	
Need 3	<>	Need 1	0.56	0.04	**		0.56	0.04	**	
Anonymity 2	<>	Anonymity 3								
Anonymity 4	<>	Anonymity 1	0.04	0.01	**		0.04	0.01	**	
Image 3	<>	Image 1	2.80	0.21	**		2.80	0.21	**	
Image 2	<>	Image 1	2.43	0.18	**		2.43	0.18	**	
Image 2	<>	Image 3	1.56	0.13	**		1.56	0.13	**	
Leisure use	<>	General interest use	1.58	0.13	**		1.65	0.13	**	
General interest use	<>	Infotainment use	1.05	0.13	**		1.16	0.13	**	
Leisure use	<>	Infotainment use	0.84	0.09	**		0.94	0.10	**	

Note. Resources 1 = Material resources
Resources 2 = Educational resources
Anonymity 1 = Home anonymity
Anonymity 2 = School anonymity
Anonymity 3 = Online anonymity
Anonymity 4 = Social anonymity
Image 1 = Information image
Image 2 = Entertainment image
Image 3 = Engagement image
Need 1 = Information need
Need 2 = Entertainment need
Need 3 = Engagement need

			School use							
			Outcome variable use				Outcome variable attitudes			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Confidence	>	Need 1	0.04	0.01	**	0.12	0.04	0.01	**	0.12
Confidence	>	Need 2	0.06	0.01	**	0.18	0.06	0.01	**	0.18
Confidence	>	Need 3	0.04	0.01	**	0.13	0.04	0.01	**	0.13
Confidence	>	Attitudes	0.50	0.06	**	0.34	0.50	0.06	**	0.34
Image 1	>	Need 1	0.08	0.01	**	0.22	0.08	0.01	**	0.22
Image 2	>	Need 2	0.11	0.02	**	0.19	0.11	0.02	**	0.19
Image 3	>	Need 3	0.13	0.02	**	0.23	0.13	0.02	**	0.23
Need 1	>	Attitudes	-0.61	0.29	*	-0.13	-0.61	0.29	*	-0.13
Need 2	>	Attitudes	1.27	0.31	**	0.26	1.27	0.31	**	0.26
Need 3	>	Attitudes								
Anonymity 1	>	Confidence								
Anonymity 1	>	Image 1								
Anonymity 1	>	Image 2								
Anonymity 1	>	Image 3								
Anonymity 1	>	Attitudes	1.14	0.56	*	0.08	1.14	0.56	*	0.08
Anonymity 2	>	Confidence								
Anonymity 2	>	Image 1								
Anonymity 2	>	Image 2								
Anonymity 2	>	Image 3								
Anonymity 2	>	Attitudes								
Anonymity 3	>	Confidence	0.20	0.10	*	0.08	0.20	0.10	*	0.08
Anonymity 3	>	Image 1								
Anonymity 3	>	Image 2	0.11	0.04	**	0.08	0.11	0.04	**	0.08
Anonymity 3	>	Image 3								
Anonymity 3	>	Attitudes								
Anonymity 4	>	Confidence	-0.48	0.15	**	-0.13	-0.48	0.15	**	-0.13
Anonymity 4	>	Image 1	-0.21	0.09	*	-0.07	-0.21	0.09	**	-0.07
Anonymity 4	>	Image 2	-0.14	0.06	*	-0.07	-0.14	0.06	*	-0.07
Anonymity 4	>	Image 3								
Anonymity 4	>	Attitudes								
Time context	>	Confidence	0.14	0.04	**	0.18	0.14	0.04	**	0.18
Time context	>	Image 1								
Time context	>	Image 2	0.04	0.01	*	0.09	0.04	0.01	*	0.09
Time context	>	Image 3	0.04	0.02	*	0.08	0.04	0.02	*	0.08
Time context	>	Attitudes								
		Internet uses								
Time context	>	General Interest								
Confidence	>	General Interest								
Need 1	>	General Interest	0.32	0.08	**	0.27	0.32	0.08	**	0.27
Need 2	>	General Interest	-0.30	0.07	**	-0.24	-0.30	0.07	**	-0.24
Need 3	>	General Interest	0.17	0.06	**	0.15	0.17	0.06	**	0.15
Anonymity 1	>	General Interest								
Anonymity 2	>	General Interest								
Anonymity 3	>	General Interest	0.14	0.04	**	0.15	0.14	0.04	**	0.15
Anonymity 4	>	General Interest								
Attitudes	>	General Interest								
Time context	>	Infotainment								
Confidence	>	Infotainment	0.08	0.02	**	0.15	0.08	0.02	**	0.15
Need 1	>	Infotainment								
Need 2	>	Infotainment								
Need 3	>	Infotainment								
Anonymity 1	>	Infotainment								

			School use							
			Outcome variable use				Outcome variable attitudes			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Anonymity 2	>	Infotainment	-0.29	0.11	*	-0.10	-0.29	0.11	*	-0.10
Anonymity 3	>	Infotainment								
Anonymity 4	>	Infotainment								
Attitudes	>	Infotainment								
Time context	>	Leisure								
Confidence	>	Leisure								
Need 1	>	Leisure								
Need 2	>	Leisure								
Need 3	>	Leisure	0.08	0.04	*	0.08	0.08	0.04	*	0.08
Anonymity 1	>	Leisure								
Anonymity 2	>	Leisure								
Anonymity 3	>	Leisure	0.08	0.03	*	0.10	0.08	0.03	*	0.10
Anonymity 4	>	Leisure								
Attitudes	>	Leisure								
Covariances										
Anonymity 2	<>	Anonymity 3	-0.05	0.02	*		-0.05	0.02	*	
Anonymity 1	<>	Anonymity 4	0.04	0.01	**		0.04	0.01	**	
Image 3	<>	Image 1	2.90	0.21	**		2.88	0.20	**	
Image 2	<>	Image 3	1.63	0.13	**		1.63	0.13	**	
Image 2	<>	Image 1	2.47	0.17	**		2.46	0.17	**	
Need 2	<>	Need 1	0.55	0.04	**		0.55	0.04	**	
Need 1	<>	Need 3	0.48	0.04	**		0.48	0.04	**	
Need 2	<>	Need 3	0.38	0.04	**		0.38	0.04	**	
Leisure	<>	General interest	0.45	0.04	**		0.45	0.04	**	
Infotainment	<>	General interest	0.44	0.06	**		0.44	0.06	**	
Infotainment	<>	Leisure	0.48	0.06	**		0.48	0.06	**	

Note. Resources 1 = Material resources
Resources 2 = Educational resources
Anonymity 1 = Home anonymity
Anonymity 2 = School anonymity
Anonymity 3 = Online anonymity
Anonymity 4 = Social anonymity
Image 1 = Information image
Image 2 = Entertainment image
Image 3 = Engagement image
Need 1 = Information need
Need 2 = Entertainment need
Need 3 = Engagement need

			Future use							
			Outcome variable use				Outcome variable attitudes			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Confidence	>	Need 1	0.04	0.01	**	0.12	0.04	0.01	**	0.12
Confidence	>	Need 2	0.06	0.01	**	0.18	0.06	0.01	**	0.18
Confidence	>	Need 3	0.04	0.01	**	0.13	0.04	0.01	**	0.13
Confidence	>	Attitudes	0.50	0.06	**	0.34	0.47	0.06	**	0.32
Image 1	>	Need 1	0.08	0.01	**	0.22	0.08	0.01	**	0.22
Image 2	>	Need 2	0.11	0.02	**	0.19	0.11	0.02	**	0.19
Image 3	>	Need 3	0.13	0.02	**	0.23	0.13	0.02	**	0.23
Need 1	>	Attitudes	-0.61	0.29	*	-0.13				
Need 2	>	Attitudes	1.26	0.31	**	0.26	0.74	0.19	**	0.15
Need 3	>	Attitudes								
Anonymity 1	>	Confidence								
Anonymity 1	>	Image 1								
Anonymity 1	>	Image 2								
Anonymity 1	>	Image 3								
Anonymity 1	>	Attitudes	1.18	0.56	*	0.08	1.19	0.56	*	0.09
Anonymity 2	>	Confidence								
Anonymity 2	>	Image 1								
Anonymity 2	>	Image 2								
Anonymity 2	>	Image 3								
Anonymity 2	>	Attitudes								
Anonymity 3	>	Confidence								
Anonymity 3	>	Image 1								
Anonymity 3	>	Image 2	0.11	0.04	**	0.08	0.11	0.04	**	0.08
Anonymity 3	>	Image 3								
Anonymity 3	>	Attitudes								
Anonymity 4	>	Confidence	-0.49	0.15	**	-0.13	-0.49	0.15	**	-0.13
Anonymity 4	>	Image 1								
Anonymity 4	>	Image 2								
Anonymity 4	>	Image 3								
Anonymity 4	>	Attitudes								
Time context	>	Confidence	0.14	0.04	**	0.18	0.14	0.04	**	0.18
Time context	>	Image 1								
Time context	>	Image 2	0.04	0.01	**	0.09	0.04	0.01	**	0.09
Time context	>	Image 3	0.04	0.02	*	0.08	0.04	0.02	*	0.08
Time context	>	Attitudes								
		Internet uses								
Time context	>	Entertainment								
Confidence	>	Entertainment	0.02	0.01	**	0.15	0.02	0.01	**	0.18
Need 1	>	Entertainment	-0.06	0.02	*	-0.17	-0.07	0.02	**	-0.18
Need 3	>	Entertainment								
Need 2	>	Entertainment	0.07	0.02	*	0.18	0.08	0.02	**	0.20
Anonymity 1	>	Entertainment								
Anonymity 2	>	Entertainment								
Anonymity 3	>	Entertainment	0.05	0.01	**	0.17	0.05	0.01	**	0.16
Anonymity 4	>	Entertainment								
Attitudes	>	Entertainment	0.01	0.00	*	0.11				
Time context	>	Information								
Confidence	>	Information	0.01	0.00	**	0.15	0.01	0.00	**	0.15
Need 1	>	Information	0.05	0.01	**	0.19	0.05	0.01	**	0.19
Need 3	>	Information								
Need 2	>	Information								
Anonymity 1	>	Information								
Anonymity 2	>	Information								
Anonymity 3	>	Information								

			Future use							
			Outcome variable use				Outcome variable attitudes			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Anonymity 4	>	Information								
Attitudes	>	Information								
Time context	>	Male								
Confidence	>	Male	0.02	0.01	**	0.17	0.02	0.01	**	0.17
Need 1	>	Male	-0.06	0.02	**	-0.16	-0.06	0.02	**	-0.16
Need 2	>	Male								
Need 3	>	Male								
Anonymity 1	>	Male	0.14	0.05	**	0.12	0.14	0.05	**	0.11
Anonymity 2	>	Male								
Anonymity 3	>	Male	0.04	0.01	**	0.11	0.04	0.01	**	0.11
Anonymity 4	>	Male								
Attitudes	>	Male					1.43	0.49	**	0.11
Covariances										
Anonymity 2	<>	Anonymity 3	-0.05	0.02	*		-0.05	0.02	*	
Anonymity 1	<>	Anonymity 4	0.04	0.01	**		0.04	0.01	**	
Image 3	<>	Image 1	2.91	0.21	**		2.91	0.21	**	
Image 2	<>	Image 3	1.64	0.13	**		1.64	0.13	**	
Image 2	<>	Image 1	2.50	0.18	**		2.50	0.18	**	
Need 2	<>	Need 1	0.55	0.04	**		0.55	0.04	**	
Need 1	<>	Need 3	0.48	0.04	**		0.48	0.04	**	
Need 2	<>	Need 3	0.38	0.04	**		0.38	0.04	**	
Entertainment	<>	Male	0.03	0.01	**		0.03	0.01	**	
Information	<>	Male	0.02	0.00	**		0.02	0.00	**	
Information	<>	Entertainment	0.01	0.00	*		0.01	0.00	**	

Note. Resources 1 = Material resources
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Anonymity 3 = Online anonymity
Anonymity 4 = Social anonymity
Image 1 = Information image
Image 2 = Entertainment image
Image 3 = Engagement image
Need 1 = Information need
Need 2 = Entertainment need
Need 3 = Engagement need

Appendix VIII Coefficients in meso model path analyses

			Home use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Ethnicity	>	Anonymity 3								
Ethnicity	>	Anonymity 1	-0.09	0.03	*	-0.12				
Ethnicity	>	Anonymity 2								
Ethnicity	>	Anonymity 2								
Ethnicity	>	Awareness					0.41	0.08	**	0.24
Ethnicity	>	Stereotype 3								
Ethnicity	>	Stereotype 1								
Ethnicity	>	Resources 1	-0.36	0.10	**	-0.16				
Ethnicity	>	Stereotype 2								
Ethnicity	>	Stereotype 4								
Ethnicity	>	Resources 2					-0.68	0.13	**	-0.25
Ethnicity	>	Confidence								
Ethnicity	>	Attitudes								
Resources 2	>	Confidence	0.30	0.09	**	0.14				
Resources 2	>	Attitudes								
Resources 1	>	Confidence					0.36	0.14	*	0.12
Resources 1	>	Attitudes								
Gender	>	Anonymity 3								
Gender	>	Anonymity 1	-0.08	0.03	**	-0.14	-0.07	0.03	*	-0.13
Gender	>	Anonymity 2								
Gender	>	Anonymity 2								
Gender	>	Awareness								
Gender	>	Stereotype 3								
Gender	>	Stereotype 1								
Gender	>	Stereotype 2								
Gender	>	Stereotype 4								
Gender	>	Resources 1								
Gender	>	Resources 2								
Gender	>	Confidence	-0.62	0.23	*	-0.11	-0.98	0.24	**	-0.19
Gender	>	Attitudes								
Anonymity 1	>	Awareness								
Anonymity 1	>	Stereotype 3								
Anonymity 1	>	Stereotype 1								
Anonymity 1	>	Stereotype 2								
Anonymity 1	>	Stereotype 4								
Anonymity 4	>	Awareness								
Anonymity 4	>	Stereotype 1								
Anonymity 4	>	Stereotype 2								
Anonymity 4	>	Stereotype 4								
Anonymity 4	>	Stereotype 3								
Anonymity 2	>	Awareness								
Anonymity 2	>	Stereotype 1								
Anonymity 2	>	Stereotype 2								
Anonymity 2	>	Stereotype 4								
Anonymity 2	>	Stereotype 3								
Anonymity 3	>	Awareness								
Anonymity 3	>	Stereotype 3								
Anonymity 3	>	Stereotype 1								
Anonymity 3	>	Stereotype 2					0.08	0.03	*	0.13
Anonymity 3	>	Stereotype 4								

			Home use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Importance of identity	>	Stereotype 3	0.24	0.07	**	0.16	0.23	0.08	**	0.15
Importance of identity	>	Stereotype 1	-0.20	0.07	**	-0.14	-0.21	0.08	*	-0.14
Importance of identity	>	Stereotype 4	0.24	0.05	**	0.20	0.24	0.06	**	0.20
Importance of identity	>	Stereotype 2								
Importance of identity	>	Confidence	0.67	0.16	**	0.18	0.53	0.16	**	0.15
Confidence	>	Attitudes	0.43	0.06	**	0.29	0.52	0.07	**	0.35
Stereotype 4	>	Confidence	0.56	0.14	**	0.18	0.51	0.14	**	0.18
Stereotype 4	>	Attitudes	0.89	0.20	**	0.20	0.89	0.20	**	0.21
Stereotype 2	>	Confidence								
Stereotype 2	>	Attitudes	-0.95	0.28	**	-0.15	-0.86	0.28	**	-0.15
Stereotype 1	>	Confidence	0.27	0.12	*	0.11	0.35	0.12	**	0.15
Stereotype 1	>	Attitudes								
Stereotype 3	>	Confidence	0.34	0.11	**	0.14	0.39	0.11	**	0.18
Stereotype 3	>	Attitudes								
		Internet uses								
Stereotype 3	>	General interest								
Stereotype 1	>	General interest								
Stereotype 2	>	General interest								
Stereotype 4	>	General interest								
Attitudes	>	General interest								
Anonymity 2	>	General interest								
Offline anonymity	>	General interest								
Anonymity 1	>	General interest								
Anonymity 3	>	General interest								
Resources 1	>	General interest	0.19	0.07	*	0.09	0.18	0.08	*	0.08
Resources 2	>	General interest	0.21	0.07	**	0.14	0.18	0.07	*	0.12
Confidence	>	General interest	0.12	0.03	**	0.18	0.12	0.04	**	0.17
Gender	>	General interest	0.45	0.17	*	0.12	0.41	0.18	*	0.11
Ethnicity	>	General interest								
Stereotype 3	>	Infotainment								
Stereotype 1	>	Infotainment								
Stereotype 2	>	Infotainment								
Stereotype 4	>	Infotainment								
Attitudes	>	Infotainment								
Offline anonymity	>	Infotainment	-0.19	0.06	**	-0.09	-0.19	0.07	*	-0.10
Anonymity 2	>	Infotainment								
Anonymity 1	>	Infotainment								
Anonymity 3	>	Infotainment								
Resources 1	>	Infotainment	0.15	0.05	**	0.13				
Resources 2	>	Infotainment	0.09	0.02	**	0.17	0.14	0.05	**	0.13
Confidence	>	Infotainment					0.09	0.02	**	0.17
Gender	>	Infotainment	-1.37	0.12	**	-0.46	-1.42	0.13	**	-0.48
Ethnicity	>	Infotainment					0.26	0.11	*	0.08
Stereotype 3	>	Leisure								
Stereotype 1	>	Leisure								
Stereotype 2	>	Leisure								
Stereotype 4	>	Leisure								
Attitudes	>	Leisure								
Anonymity 4	>	Leisure								
Anonymity 2	>	Leisure								
Anonymity 1	>	Leisure								
Anonymity 3	>	Leisure								

			Home use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Resources 2	>	Leisure	0.20	0.05	**	0.19	0.18	0.05	**	0.18
Confidence	>	Leisure	0.10	0.02	**	0.21	0.11	0.03	**	0.21
Gender	>	Leisure	0.39	0.12	**	0.14	0.40	0.13	**	0.15
Ethnicity	>	Leisure								
Covariances										
Ethnicity	<>	Gender	0.03	0.01	**		0.04	0.01	**	
Anonymity 4	<>	Anonymity 1	0.04	0.01	**		0.03	0.01	**	
Stereotype 4	<>	Stereotype 3	0.14	0.05	*					
Stereotype 4	<>	Stereotype 1	0.20	0.05	**		0.18	0.05	**	
Stereotype 1	<>	Stereotype 2	0.11	0.04	**					
Stereotype 3	<>	Stereotype 2	0.19	0.04	**		0.23	0.04	**	
Stereotype 3	<>	Stereotype 1	-0.26	0.06	**		-0.33	0.07	**	
Stereotype 4	<>	Stereotype 2	0.07	0.03	*					
Resources 2	<>	Resources 1	0.16	0.05	**		0.20	0.06	**	
Infotainment	<>	General interest	1.08	0.12	**		1.01	0.12	**	
Leisure	<>	Infotainment	0.90	0.08	**		0.86	0.09	**	
Leisure	<>	General interest	1.51	0.13	**		1.51	0.14	**	

Note. Resources 1 = Material resources
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Anonymity 1 = Home anonymity
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Anonymity 3 = Online anonymity
Anonymity 4 = Social anonymity
Stereotype 1 = Women are more skilled than men
Stereotype 2 = Ethnic minorities are more skilled than the majority
Stereotype 3 = Young people are more skilled than older people
Stereotype 4 = The internet is important for [my in-group]

			School use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Ethnicity	>	Anonymity 3								
Ethnicity	>	Anonymity 1	-0.09	0.03	*	-0.12				
Ethnicity	>	Anonymity 2								
Ethnicity	>	Anonymity 2								
Ethnicity	>	Awareness					0.40	0.08	**	0.23
Ethnicity	>	Stereotype 3								
Ethnicity	>	Stereotype 1								
Ethnicity	>	Resources 1	-0.37	0.09	**	-0.16				
Ethnicity	>	Stereotype 2								
Ethnicity	>	Stereotype 4								
Ethnicity	>	Resources 2	-0.30	0.14	*	-0.09	-0.62	0.12	**	-0.23
Ethnicity	>	Confidence								
Ethnicity	>	Attitudes								
Gender	>	Anonymity 3								
Gender	>	Anonymity 1	-0.09	0.03	**	-0.14	-0.08	0.03	**	-0.15
Gender	>	Anonymity 2								
Gender	>	Anonymity 2								
Gender	>	Awareness								
Gender	>	Stereotype 3								
Gender	>	Stereotype 1	0.22	0.09	*	0.10				
Gender	>	Stereotype 2								
Gender	>	Stereotype 4								
Gender	>	Resources 1								
Gender	>	Resources 2								
Gender	>	Confidence	-0.65	0.22	**	-0.11	-1.05	0.23	**	-0.19
Gender	>	Attitudes								
Resources 2	>	Confidence	0.26	0.09	**	0.12				
Resources 2	>	Attitudes								
Resources 1	>	Confidence					0.32	0.13	*	0.11
Resources 1	>	Attitudes								
Anonymity 1	>	Awareness								
Anonymity 1	>	Stereotype 3								
Anonymity 1	>	Stereotype 1								
Anonymity 1	>	Stereotype 2								
Anonymity 1	>	Stereotype 4								
Anonymity 3	>	Awareness								
Anonymity 3	>	Stereotype 3								
Anonymity 3	>	Stereotype 1								
Anonymity 3	>	Stereotype 2					0.07	0.03	*	0.11
Anonymity 3	>	Stereotype 4								
Anonymity 2	>	Awareness								
Anonymity 2	>	Stereotype 1								
Anonymity 2	>	Stereotype 2								
Anonymity 2	>	Stereotype 4								
Anonymity 2	>	Stereotype 3								
Anonymity 4	>	Awareness								
Anonymity 4	>	Stereotype 1								
Anonymity 4	>	Stereotype 2								
Anonymity 4	>	Stereotype 4								
Anonymity 4	>	Stereotype 3								
Stereotype 4	>	Confidence	0.65	0.13	**	0.21	0.61	0.13	**	0.21
Stereotype 4	>	Attitudes	0.78	0.18	**	0.17	0.82	0.19	**	0.19

			School use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Stereotype 2	>	Confidence								
Stereotype 2	>	Attitudes	-0.77	0.25	**	-0.12	-0.65	0.26	*	-0.11
Stereotype 1	>	Confidence	0.25	0.11	*	0.10	0.31	0.11	*	0.13
Stereotype 1	>	Attitudes								
Stereotype 3	>	Confidence	0.29	0.11	*	0.12	0.37	0.11	**	0.16
Stereotype 3	>	Attitudes								
Awareness	>	Importance of identity	0.50	0.03	**	0.53	0.50	0.04	**	0.53
Confidence	>	Attitudes	0.47	0.06	**	0.32	0.54	0.06	**	0.37
Importance of identity	>	Stereotype 3	0.22	0.06	**	0.15	0.22	0.07	**	0.15
Importance of identity	>	Stereotype 1	-0.18	0.06	**	-0.13	-0.18	0.07	*	-0.12
Importance of identity	>	Stereotype 4	0.21	0.05	**	0.19	0.22	0.05	**	0.19
Importance of identity	>	Stereotype 2								
Importance of identity	>	Confidence	0.57	0.14	**	0.16	0.45	0.15	**	0.13
		Internet uses								
Stereotype 3	>	General interest								
Stereotype 1	>	General interest								
Stereotype 2	>	General interest								
Stereotype 4	>	General interest								
Attitudes	>	General interest								
Anonymity 2	>	General interest								
Anonymity 4	>	General interest								
Anonymity 1	>	General interest								
Anonymity 3	>	General interest	0.13	0.04	**	0.14	0.10	0.04	*	0.10
Resources 1	>	General interest								
Resources 2	>	General interest								
Confidence	>	General interest								
Gender	>	General interest								
Ethnicity	>	General interest	0.22	0.11	*	0.08				
Stereotype 3	>	Infotainment								
Stereotype 1	>	Infotainment								
Stereotype 2	>	Infotainment								
Stereotype 4	>	Infotainment	0.17	0.06	**	0.11	0.16	0.06	*	0.11
Attitudes	>	Infotainment								
Anonymity 4	>	Infotainment								
Anonymity 2	>	Infotainment	-0.28	0.11	*	-0.10	-0.32	0.12	*	-0.12
Anonymity 1	>	Infotainment								
Anonymity 3	>	Infotainment								
Resources 1	>	Infotainment								
Resources 2	>	Infotainment								
Confidence	>	Infotainment								
Gender	>	Infotainment	-0.86	0.11	**	-0.30	-0.89	0.12	**	-0.32
Ethnicity	>	Infotainment								
Stereotype 3	>	Leisure								
Stereotype 1	>	Leisure								
Stereotype 2	>	Leisure								
Stereotype 4	>	Leisure								
Attitudes	>	Leisure								
Anonymity 4	>	Leisure								
Anonymity 2	>	Leisure								
Anonymity 1	>	Leisure								
Anonymity 3	>	Leisure	0.08	0.03	*	0.10	0.07	0.04	*	0.09
Resources 1	>	Leisure								
Resources 2	>	Leisure								

			School use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Confidence	>	Leisure								
Gender	>	Leisure								
Ethnicity	>	Leisure	0.24	0.09	*	0.11				
Covariances										
Ethnicity	<>	Gender	0.03	0.01	**		0.03	0.01	**	
Anonymity 4	<>	Anonymity 1	0.04	0.01	**		0.04	0.01	**	
Stereotype 4	<>	Stereotype 3	0.10	0.05	*		0.10	0.05	*	
Stereotype 4	<>	Stereotype 1	0.16	0.05	**		0.13	0.05	*	
Stereotype 1	<>	Stereotype 2	0.10	0.03	**		0.07	0.04	*	
Stereotype 3	<>	Stereotype 2	0.18	0.04	**		0.21	0.04	**	
Stereotype 3	<>	Stereotype 1	-0.25	0.06	**		-0.26	0.07	**	
Stereotype 4	<>	Stereotype 2								
Resources 2	<>	Resources 1	0.16	0.05	**		0.19	0.05	**	
Infotainment	<>	General interest	0.45	0.05	**		0.46	0.05	**	
Leisure	<>	Infotainment	0.49	0.06	**		0.45	0.06	**	
Leisure	<>	General interest	0.48	0.06	**		0.47	0.07	**	

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Stereotype 2 = Ethnic minorities are more skilled than the majority
Stereotype 3 = Young people are more skilled than older people
Stereotype 4 = The internet is important for [my in-group]

			Future use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Ethnicity	>	Anonymity 3								
Ethnicity	>	Anonymity 1	-0.09	0.03	*	-0.12				
Ethnicity	>	Anonymity 2								
Ethnicity	>	Anonymity 2								
Ethnicity	>	Awareness					0.40	0.08	**	0.23
Ethnicity	>	Stereotype 3								
Ethnicity	>	Stereotype 1								
Ethnicity	>	Resources 1	-0.37	0.09	**	-0.16				
Ethnicity	>	Stereotype 2								
Ethnicity	>	Stereotype 4								
Ethnicity	>	Resources 2	-0.30	0.14	*	-0.09	-0.62	0.12	**	-0.23
Ethnicity	>	Confidence								
Ethnicity	>	Attitudes								
Gender	>	Anonymity 3								
Gender	>	Anonymity 1	-0.09	0.03	**	-0.14	-0.08	0.03	**	-0.15
Gender	>	Anonymity 2								
Gender	>	Anonymity 2								
Gender	>	Awareness								
Gender	>	Stereotype 3								
Gender	>	Stereotype 1	0.22	0.09	*	0.10				
Gender	>	Stereotype 2								
Gender	>	Stereotype 4								
Gender	>	Resources 1								
Gender	>	Resources 2								
Gender	>	Confidence	-0.63	0.22	**	-0.11	-1.03	0.23	**	-0.19
Gender	>	Attitudes								
Resources 2	>	Confidence	0.26	0.09	**	0.12				
Resources 2	>	Attitudes								
Resources 1	>	Confidence					0.32	0.13	*	0.11
Resources 1	>	Attitudes								
Anonymity 1	>	Awareness								
Anonymity 1	>	Stereotype 3								
Anonymity 1	>	Stereotype 1								
Anonymity 1	>	Stereotype 2								
Anonymity 1	>	Stereotype 4								
Anonymity 4	>	Awareness								
Anonymity 4	>	Stereotype 1								
Anonymity 4	>	Stereotype 2								
Anonymity 4	>	Stereotype 4								
Anonymity 4	>	Stereotype 3								
Anonymity 3	>	Awareness								
Anonymity 3	>	Stereotype 3								
Anonymity 3	>	Stereotype 1								
Anonymity 3	>	Stereotype 2					0.07	0.03	*	0.11
Anonymity 3	>	Stereotype 4								
Anonymity 2	>	Awareness								
Anonymity 2	>	Stereotype 1								
Anonymity 2	>	Stereotype 2								
Anonymity 2	>	Stereotype 4								
Anonymity 2	>	Stereotype 3								
Stereotype 4	>	Confidence	0.65	0.13	**	0.21	0.62	0.13	**	0.21
Stereotype 4	>	Attitudes	0.79	0.18	**	0.17	0.82	0.19	**	0.19

			Future use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Stereotype 2	>	Confidence								
Stereotype 2	>	Attitudes	-0.77	0.25	**	-0.12	-0.65	0.26	*	-0.11
Stereotype 1	>	Confidence	0.25	0.11	*	0.10	0.31	0.11	*	0.13
Stereotype 1	>	Attitudes								
Stereotype 3	>	Confidence	0.29	0.11	*	0.12	0.37	0.11	**	0.16
Stereotype 3	>	Attitudes								
Awareness	>	Importance of identity	0.50	0.03	**	0.53	0.50	0.04	**	0.53
Confidence	>	Attitudes	0.47	0.06	**	0.32	0.54	0.06	**	0.37
Importance of identity	>	Stereotype 3	0.22	0.06	**	0.15	0.21	0.07	**	0.15
Importance of identity	>	Stereotype 1	-0.18	0.06	**	-0.13	-0.18	0.07	*	-0.12
Importance of identity	>	Stereotype 4	0.21	0.05	**	0.18	0.22	0.05	**	0.19
Importance of identity	>	Stereotype 2								
Importance of identity	>	Confidence	0.58	0.14	**	0.16	0.45	0.15	**	0.13
		Internet uses								
Stereotype 3	>	Information								
Stereotype 1	>	Information								
Stereotype 2	>	Information								
Stereotype 4	>	Information								
Attitudes	>	Information								
Anonymity 4	>	Information								
Anonymity 2	>	Information								
Anonymity 1	>	Information								
Anonymity 3	>	Information								
Resources 1	>	Information								
Resources 2	>	Information	0.02	0.01	**	0.13	0.02	0.01	**	0.13
Confidence	>	Information	0.01	0.00	**	0.14	0.01	0.00	**	0.15
Gender	>	Information								
Ethnicity	>	Information								
Stereotype 3	>	Entertainment								
Stereotype 1	>	Entertainment								
Stereotype 2	>	Entertainment								
Stereotype 4	>	Entertainment								
Attitudes	>	Entertainment	0.01	0.00	**	0.12	7.00	0.00	*	0.09
Anonymity 4	>	Entertainment								
Anonymity 2	>	Entertainment					-0.06	0.03	*	-0.09
Anonymity 1	>	Entertainment								
Anonymity 3	>	Entertainment	0.05	0.01	**	0.17	0.04	0.01	**	0.14
Resources 1	>	Entertainment					0.03	0.02	*	0.09
Resources 2	>	Entertainment								
Confidence	>	Entertainment	0.01	0.01	*	0.11	0.01	0.01	*	0.12
Gender	>	Entertainment	-0.19	0.03	**	-0.29	-0.20	0.03	**	-0.31
Ethnicity	>	Entertainment								
Stereotype 3	>	Male								
Stereotype 1	>	Male								
Stereotype 2	>	Male								
Stereotype 4	>	Male								
Attitudes	>	Male								
Anonymity 2	>	Male								
Anonymity 4	>	Male					-0.07	0.03	*	-0.09

			Future use							
			Internet status comparison				Social status comparison			
			b	*SE b*	*p*	*β*	*b*	*SE b*	*p*	*β*
Anonymity 1	>	Male								
Anonymity 3	>	Male	0.04	0.01	**	0.11	0.03	0.01	*	0.10
Resources 1	>	Male								
Resources 2	>	Male								
Confidence	>	Male								
Gender	>	Male	-0.42	0.02	**	-0.59	-0.42	0.03	**	-0.58
Ethnicity	>	Male								
Covariances										
Ethnicity	<>	Gender	0.03	0.01	**					
Anonymity 4	<>	Anonymity 1	0.04	0.01	**		0.04	0.01	**	
Stereotype 4	<>	Stereotype 3	0.10	0.05	0.03		0.10	0.05	*	
Stereotype 4	<>	Stereotype 1	0.16	0.05	**		0.13	0.05	*	
Stereotype 1	<>	Stereotype 2	0.10	0.03	0.00		0.08	0.04	*	
Stereotype 3	<>	Stereotype 2	0.18	0.04	**		0.21	0.04	**	
Stereotype 3	<>	Stereotype 1	-0.25	0.06	**		-0.26	0.07	**	
Stereotype 4	<>	Stereotype 2								
Resources 2	<>	Resources 1	0.16	0.05	**		0.19	0.05	**	
Information	<>	Entertainment	0.02	0.00	**		0.02	0.00	**	
Male	<>	Information	0.02	0.00	**		6.00	0.00	*	
Male	<>	Entertainment	0.01	0.00	*		0.02	0.00	**	

Note. Resources 1 = Material resources
Resources 2 = Educational resources
Anonymity 1 = Home anonymity
Anonymity 2 = School anonymity
Anonymity 3 = Online anonymity
Anonymity 4 = Social anonymity
Stereotype 1 = Women are more skilled than men
Stereotype 2 = Ethnic minorities are more skilled than the majority
Stereotype 3 = Young people are more skilled than older people
Stereotype 4 = The internet is important for [my in-group]

Appendix IX Means in experiment by gender, ethnicity and condition

Table 2 Averages by gender by condition

		Condition	Gender		Youth		Neutral		
Element	Item	Group	Girls	Boys	Girls	Boys	Girls	Boys	All
Importance of social identity	Importance of gender		2.79	2.56	2.73	2.44	2.60	2.39	2.62
	Importance of ethnicity		2.69	2.37	2.73	2.44	2.35	2.00	2.46
	Importance of youth		2.59	2.47	2.41	2.50	2.50	2.04	2.49
Skill	Self-efficacy		5.87	6.72	7.41	5.56	6.10	6.22	6.33
Attitudes	Awe for the internet		19.56	19.77	19.41	18.75	19.65	18.57	19.36
	Frustration with the internet		5.23	4.49	4.36	5.06	5.20	5.13	4.93
	Internet is a social safe place		4.72	5.05	4.91	5.94	5.55	5.09	5.03
Observed behaviour	Total selection time		25.96	16.92	16.86	26.21	22.42	22.39	21.32
	Female link selection		0.44	0.72	0.45	0.31	0.35	0.65	0.54
	Ethnic minority link selection		1.46	1.82	1.73	1.81	1.95	1.78	1.74
	Neutral link selection		1.18	0.86	1.14	0.94	1.30	1.09	1.04
	Youth link selection		0.92	0.60	0.68	0.94	0.40	0.48	0.67
	Female chat partner selection		1.15	1.40	1.23	1.25	0.90	1.13	1.21
	Male chat partner selection		0.85	0.60	0.77	0.75	1.10	0.87	0.79
	Asian chat partner selection		0.79	0.84	0.77	0.81	0.85	0.70	0.79
	African Caribbean chat partner selection		0.44	0.14	0.27	0.31	0.30	0.22	0.28
	White chat partner selection		0.36	0.54	0.36	0.56	0.35	0.48	0.46
	Neutral chat partner selection		0.41	0.47	0.59	0.31	0.50	0.61	0.48
Cognitive strategy	*Strategies for choice justification*								
	Active link selection strategy		0.36	0.63	0.50	0.69	0.55	0.43	0.50
	Most interesting		0.23	0.05	0.14	0.19	0.15	0.04	0.13
	Most interesting		0.05	0.11	0.18	0.06	0.15	0.00	0.10
	Passive link selection strategy		1.56	1.33	1.36	1.31	1.45	1.52	1.44
	Active chat selection strategy		0.64	0.51	0.23	0.63	0.60	0.70	0.56
	Passive chat selection strategy		0.31	0.42	0.64	0.38	0.35	0.26	0.38
	Strategies for perceived normal behaviour								
	Search engines for information		0.90	0.96	0.95	0.69	0.90	0.87	0.90
	Coincidence for information		0.26	0.25	0.23	0.13	0.30	0.35	0.26
	Expert for information		0.46	0.39	0.59	0.50	0.35	0.91	0.50
	Non-strategy for information		0.05	0.04	0.05	0.06	0.00	0.00	0.03
	Chats to friends online		1.82	1.89	1.45	2.19	1.70	1.43	1.76
	Chats to family online		0.64	0.21	0.55	0.56	0.65	0.43	0.46
	Chats to unknowns online		0.03	0.11	0.14	0.06	0.10	0.17	0.12

Appendix IX Means in experiment by gender, ethnicity and condition

Table 3 Averages by ethnicity by condition

Element	Item	Condition Group	Ethnicity AC	Ethnicity AS	Neutral AC	Neutral AS	Youth White	Youth Other
Importance of social identity	Importance of gender		2.56	2.75	2.71	2.53	2.35	2.58
	Importance of ethnicity		2.78	2.50	2.71	2.26	1.82	2.58
	Importance of youth		2.89	2.75	2.43	2.32	2.12	2.47
Skill	Self-efficacy		5.33	6.35	6.43	5.95	6.29	6.58
Attitudes	Awe for the internet		17.89	19.50	18.14	19.26	19.24	19.44
	Frustration with the internet		5.67	5.25	5.14	5.11	5.24	4.56
	Internet is a social safe place		4.56	4.65	5.14	5.68	4.94	5.47
Observed behaviour	Total selection time		18.91	24.55	17.38	21.11	25.91	20.91
	Female link selection		0.89	0.40	0.86	0.47	0.41	0.39
	Ethnic minority link selection		1.00	2.10	1.57	2.00	1.82	1.72
	Neutral link selection		1.11	0.95	1.29	1.05	1.29	1.11
	Youth link selection		1.00	0.55	0.29	0.47	0.47	0.78
	Female chat partner selection		0.89	1.25	1.14	1.05	0.94	1.25
	Male chat partner selection		1.11	0.75	0.86	0.95	1.06	0.75
	Asian chat partner selection		0.67	0.75	1.29	0.95	0.35	0.78
	African Caribbean chat partner selection		0.67	0.20	0.14	0.26	0.29	0.28
	White chat partner selection		0.56	0.45	0.29	0.32	0.59	0.47
	Neutral chat partner selection		0.11	0.60	0.29	0.47	0.76	0.47
Cognitive strategy	*Strategies for choice justification*							
	Active link selection strategy		0.67	0.25	0.57	0.63	0.29	0.50
	Most interesting		0.22	0.15	0.14	0.11	0.06	0.17
	Most interesting		0.11	0.15	0.00	0.11	0.06	0.14
	Passive link selection strategy		1.33	1.60	1.29	1.37	1.71	1.42
	Active chat selection strategy		0.78	0.60	0.57	0.63	0.71	0.39
	Passive chat selection strategy		0.22	0.35	0.29	0.32	0.29	0.53
	Strategies for perceived normal behaviour							
	Search engines for information		0.78	0.90	0.86	0.89	0.88	0.83
	Coincidence for information		0.11	0.35	0.71	0.11	0.41	0.19
	Expert for information		0.44	0.55	0.57	0.63	0.71	0.58
	Non-strategy for information		0.00	0.00	0.00	0.00	0.00	0.06
	Chats to friends online		1.89	1.60	1.14	2.00	1.24	1.75
	Chats to family online		0.44	0.45	0.29	0.89	0.24	0.58
	Chats to unknowns online		0.22	0.25	0.14	0.00	0.29	0.11

Note. AC=African Caribbean, AS=Asian.

Appendix IX Means in experiment by gender, ethnicity and condition

Table 4 Averages by condition

Element	Item	Condition	Gender	Neutral	Ethnicity	Youth
Importance of social identity	Importance of gender		4.20	4.28	3.86	4.03
	Importance of ethnicity		3.85	4.03	3.35	3.89
	Importance of youth		3.89	4.38	3.40	3.61
Skill	Self-efficacy		6.38	6.03	6.16	6.63
Attitudes	Awe for the internet		19.69	19.00	19.07	19.13
	Frustration with the internet		4.79	5.38	5.16	4.66
	Internet is a social safe place		4.92	4.62	5.30	5.34
Observed behaviour	Total selection time		20.59	22.80	22.40	20.79
	Female link selection		0.60	0.55	0.51	0.39
	Ethnic minority link selection		1.68	1.76	1.86	1.76
	Neutral link selection		0.99	1.00	1.19	1.05
	Youth link selection		0.73	0.69	0.44	0.79
	Female chat partner selection		1.30	1.14	1.02	1.24
	Male chat partner selection		0.70	0.86	0.98	0.76
	Asian chat partner selection		0.82	0.72	0.77	0.79
	African Caribbean chat partner selection		0.26	0.34	0.26	0.29
	White chat partner selection		0.47	0.48	0.42	0.45
	Neutral chat partner selection		0.45	0.45	0.56	0.47
Cognitive strategy	*Strategies for choice justification*					
	Active link selection strategy		0.52	0.38	0.49	0.58
	Most interesting		0.13	0.17	0.09	0.16
	Most interesting		0.08	0.14	0.07	0.13
	Passive link selection strategy		1.43	1.52	1.49	1.34
	Active chat selection strategy		0.56	0.66	0.65	0.39
	Passive chat selection strategy		0.38	0.31	0.30	0.53
	Strategies for perceived normal behaviour					
	Search engines for information		0.94	0.86	0.88	0.84
	Coincidence for information		0.25	0.28	0.33	0.18
	Expert for information		0.42	0.52	0.65	0.55
	Non-strategy for information		0.04	0.00	0.00	0.05
	Chats to friends online		1.86	1.69	1.56	1.76
	Chats to family online		0.39	0.45	0.53	0.55
	Chats to unknowns online		0.07	0.24	0.14	0.11

Appendix X Factor analyses in experiment

Table 1 Factor analysis: Attitudes

Attitude item	Awe for the internet	Internet is frustrating	Internet is a social safe place
Overuse of the internet may be addictive	0.42		
There are unlimited possibilities of the internet that have not been thought of yet	0.48		
Use of the internet improves people's standard of living	0.55		
The internet is a fast and efficient means of gaining information	0.81		
Life is easier with the internet	0.58		
The internet's complexity intimidates me		0.99	
The internet is frustrating to work with		0.30	
It's easier to talk about personal things on the internet			0.56
I feel more confident on the internet than I do in real life			0.66

Base. All participants (N=208).
Note. Maximum Likelihood method used with Varimax rotation. Only variables with factor loadings >.30 were included on the scale.

Table 2 Factor analysis: Cognitive strategies – normal information searching

How do you mostly look for information on the internet?	Coincidence strategy	Expert strategy	Non-strategy
Through search engines			
Just stumble across it	0.99		
Ask others to help me out	0.34	0.34	
I know a few good web addresses by heart		0.54	
I use my favourites		0.59	
I never look for information on the internet			0.84
I really don't know			0.37
Other			0.47

Note. Maximum Likelihood method used with Varimax rotation. Only variables with factor loadings >.30 were included on the scale.

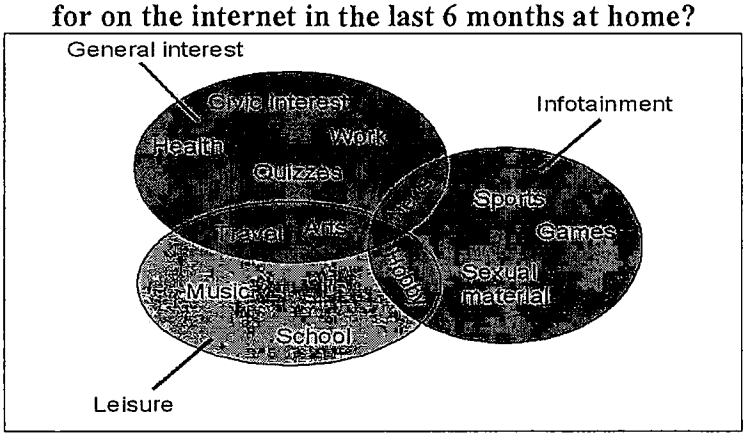
Table 3 Factor analysis: Cognitive strategies – normal chat partner selection

Who do you usually chat with on the internet?	Friends	Family	Unknowns
Friends I know from real life	0.92		
Friends I know from the internet	0.21		
I never chat online	-0.78		
Family who live near me		0.51	
Family who live further away		0.98	
People I don't know			0.85

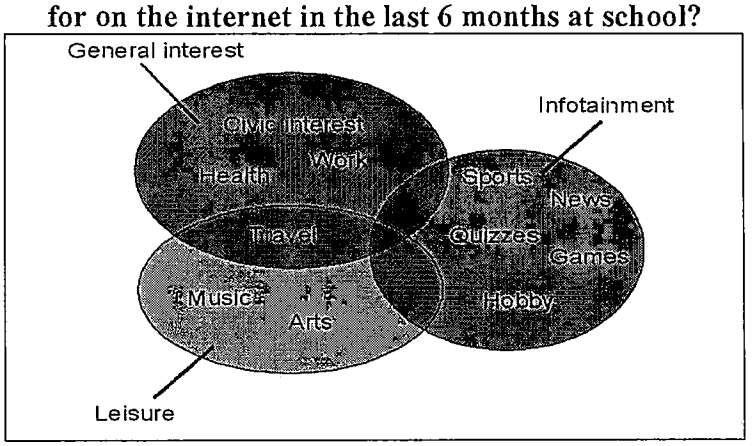
Note. Maximum Likelihood method used with Varimax rotation. Only variables with factor loadings <-.30 or >.30 were included on the scale.

Variables: Uses of the internet

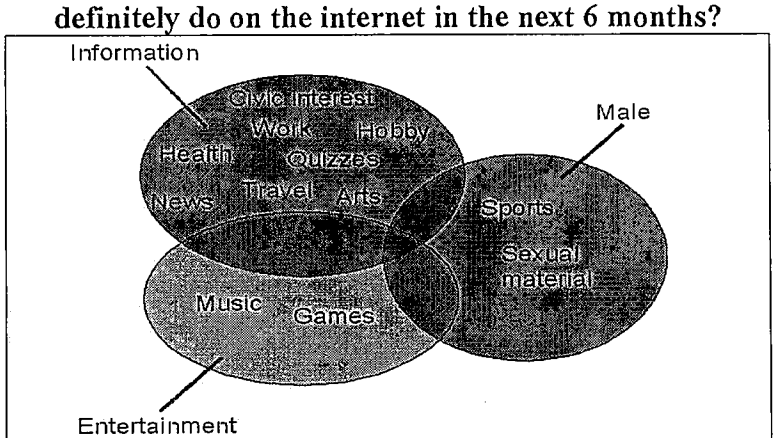
Home use: **Which of these things have you looked for on the internet in the last 6 months at home?**



School use: **Which of these things have you looked for on the internet in the last 6 months at school?**



Future use: **Which of the following things will you definitely do on the internet in the next 6 months?**



Note: Graphs based on factor analyses; uses that loaded highly (>.30) on more than one factor were included in both factors and are depicted in areas where circles overlap.

Variables used in path analyses and linear regression

Macro digital divide model variables- used in chapter 4 & 7:

Page	Labels	Variables
122	Socio-demographics:	Gender (Boy/Girl); Ethnicity (Asian/African Caribbean/White); Ability (Non-disabled/Disabled); Sexuality (Non-LGB/LGB);
122	Resources:	Material (Cars) resources in the home; Educational (Books) resources in the home;
122	Access:	Use of the internet at home;
123	Online confidence (A):	Sum of (Technical confidence scale; Interaction confidence scale; Comparative self-efficacy scale);
124	Quantity of use (B):	Product of (Proportion of media use time spent online scale; Frequency of internet use);

Micro model variables – described and used in chapter 5 & 7:

Page	Labels	Variables
162	Social context (anonymity):	School anonymity; Home anonymity; Social anonymity; Online anonymity scale;
164	Time context (Likelihood future interaction):	Product of (Frequency of future use; B) ;
164	On- and offline confidence (C):	Sum of (Offline Individuality; Offline Pride; C) ;
165	Internet images:	The internet is good for ...Information and services scale; Engagement scale; Entertainment scale;
166	Internet needs:	The internet is important for ...Information and services scale; Engagement scale; Entertainment scale;
167	Internet attitudes:	Average of (the internet is ...Life enhancing scale; Awe inspiring scale; Not frustrating scale);

Meso level variables – described and used in chapter 6 & 7:

Page	Labels	Variables
122	Socio-demographics:	Gender; Ethnicity; Ability; Sexuality;
122	Resources:	Material resources; Educational resources;
162	Social context:	Home anonymity; School anonymity; Social anonymity; Online anonymity;
168	Internet attitudes:	Average of (Life enhancing scale; Awe inspiring scale; Not frustrating scale)
204	Stereotypes:	Importance of the internet for ...the in-group scale; ...the out-group scale;
205		Skills of ...young people; women; ethnic minorities; LGB; individuals (in comparison to older people; men; ethnic majority; non-LGB);
206	General confidence:	Sum of (Offline social group self-esteem; C);
206 208	Social identification:	Awareness of different in-group identities; Importance of in-group identities

Note. For the linear regressions in chapter 7 all individual variables (separated by ;) presented on this card were used. Composite scales for confidence, quantity of use, time context and attitudes were used in the path analyses in chapters 4, 5 and 6.